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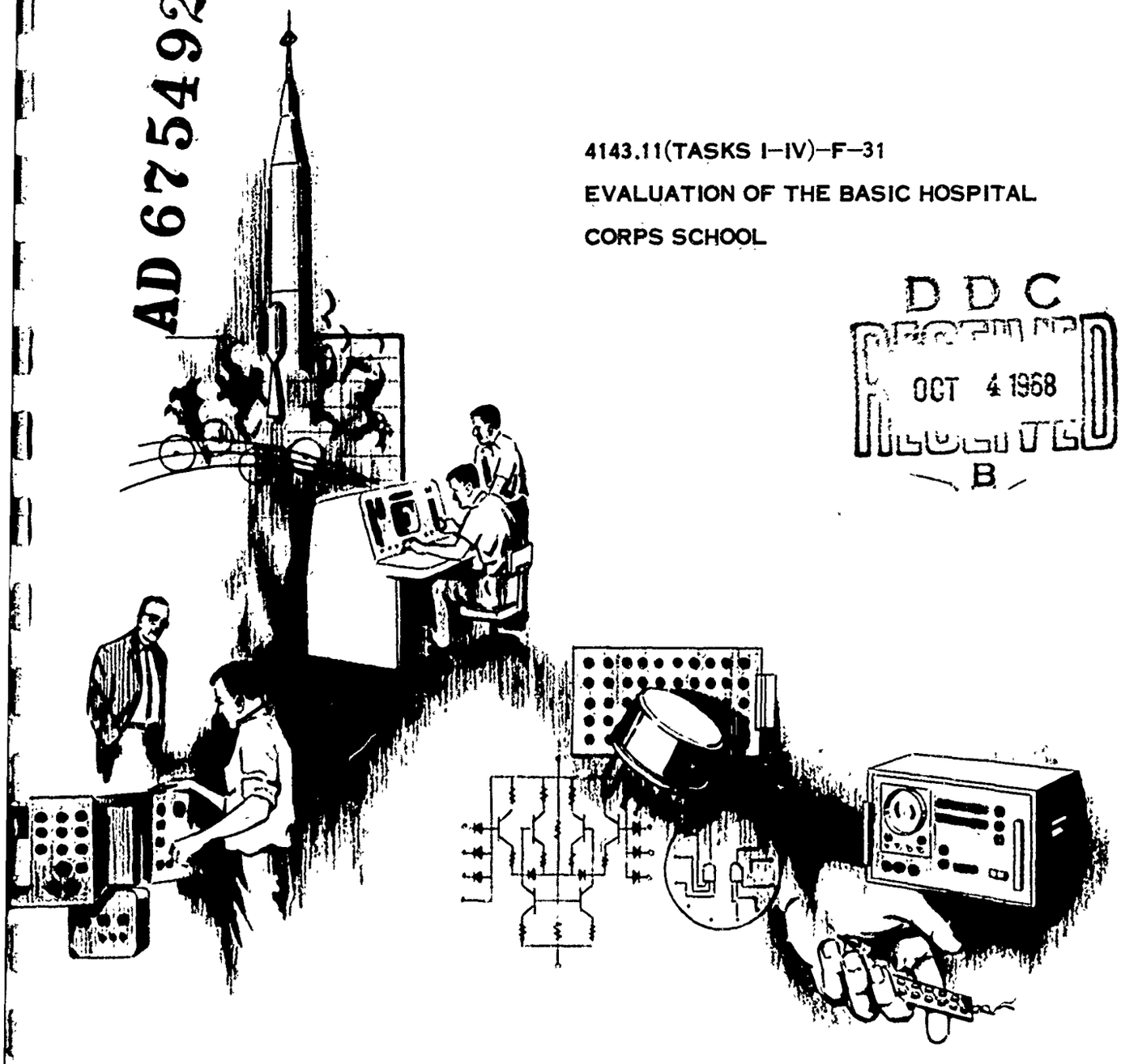
EVALUATION OF THE BASIC HOSPITAL CORPS SCHOOL



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EVALUATION OF THE BASIC HOSPITAL CORPS SCHOOL

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(VIEWS EXPRESSED ARE THOSE OF THE AUTHORS AND DO NOT NECESSARILY REPRESENT THOSE OF THE DEPARTMENT OF DEFENSE.)

REPORT OF RESEARCH PERFORMED FOR THE BUREAU OF MEDICINE AND SURGERY AND THE OFFICE OF NAVAL RESEARCH UNDER ONR CONTRACT N00014-67-C-0501.

JULY 1968

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ABSTRACT

This is the first phase of a larger research effort. Two major areas were investigated: (1) The nature of the present curricula at the two schools and (2) the nature of the job requirements expected of newly graduated Corpsmen at their first duty station. The development and construction of four instruments and the analysis and description of the present curriculum was accomplished. The curriculum analysis consisted of a topic by topic analysis of the individual Corps school curricula and a summarization of major discrepancies. The retention instrument was designed to be a "comprehensive" test of knowledge covering material learned in the two basic schools. The survey was an integral part of the retention examination and was designed to determine where student and graduate Corpsmen gained retention item information. The task scale was composed of a list of the tasks that comprised the job which the Junior Corpsman performed at his first duty station. Raters were asked to respond in terms of present level of Junior Corpsmen capability and a realistic "hoped for" rating assuming optimal training conditions could be augmented. The questionnaires asked for responses primarily of a demographic and attitudinal nature. The retention and survey instruments were administered to students of both schools in their final week of training and to Junior Corpsmen in thirteen select duty stations. This group also filled out one form of the questionnaire. Various other forms of the questionnaires and the task scale were administered to physicians, nurses and Senior Corpsmen at the thirteen select duty stations. These instruments and the evaluation were tailor-made to give the appropriate Naval decision-makers the necessary data input to begin formation of an experimental curriculum and to continue with future research phases.

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I. BACKGROUND AND PURPOSE

This project was the result of recent indications suggesting that a need existed for a more effective, efficient, and economic patient care system in the Navy Medical Department, both ashore and afloat. To fulfill this need it was necessary to reassess, re-evaluate and, if necessary, revise those educational and training programs within the department involving nursing service personnel at all levels. This program is a first step in the development of a higher quality patient care system and is directed specifically to the training of Corpsmen at the Basic Hospital Corps Schools.

The Hospital Corpsman in the Navy is the enlisted member of the nursing service personnel giving direct patient care. The mission of the Hospital Corps as defined in the Handbook of the Hospital Corps is to:

> "... give on land, sea, and in the air, intelligent, capable and efficient assistance to Medical, Dental, Medical Service, Nurse, and Hospital Corps officers in the eternal war against disease, injury, and death, and to aid in maintaining the supply and administrative functions of the supportive branches of the Medical Department; in the absence of these officers, to display the knowledge and judgment required to meet all emergencies and in every possible manner assist to the best of their ability, training and knowledge in the function of the Department of the Navy..." (page I-6).

The Handbook further states that:

> "This complex mission requires from each member of the Hospital Corps a versatility neither demanded nor expected of other enlisted ratings in the Navy." (page I-6).

Indicating the high degree of performance of Hospital Corpsmen over the years, at the end of World War II, the then Secretary of the Navy, James Forrestal, commended the Corps by stating:

"... The Hospital Corps is never at peace. It is forever on the firing line in the ceaseless war against disease and premature death. That is why the Corps' emblem is truly 'the red badge of courage,' a designation to all the world that the person who wears it has been self-dedicated to the service of humanity.

Customarily the 'well done' signal is reserved for the closing phrase of a message of congratulation, but I placed it in the forefront where, in this instance, it most fittingly belongs. I repeat it, here, with the postscript that in earning its 'well done,' the Hospital Corps is assured no other unit in the Navy did better in the degree of essential duty inspiringly performed." (page 1-2).

The Hospital Corps is the most highly decorated unit in the Navy, i. e., 46 percent of the Congressional Medal of Honor winners in World War II in the Navy went to this Corps. The Hospital Corpsman along with other members of the Bureau of Medicine and Surgery have a most important function; that of the maintenance of human life. In order that this important function may be carried out with the highest degree of success, it is essential that emphasis be placed on appropriate training to insure this end.

The Hospital Corps consists of the enlisted members of the Navy Medical Department and provides the technical support for that department. This support includes a variety of functions. The Corpsman administers the direct patient care in hospitals and in the field. He also provides the patient care in other Navy medical activities and the first aid to the injured of the operating forces at sea and with the Marine Corps. The Corpsman provides the technical support in the paramedical functions, such as laboratory, pharmacy, operating room, X-ray department. Furthermore, the Corpsman may receive an assignment as an administrative assistant, personnel office clerk, typist, photographer, and others similarly distant to the patient care area. The initial preparation for these varied functions is considered to be the responsibility of the Basic Hospital Corps School.

Hospital Corpsman, on completion of the Basic Hospital Corps School program, are most frequently assigned to large Naval hospitals for continued training and experience in giving nursing care. The amount and quality of this essential on-the-job training varies with the installation, the personnel, and the

conditions extant at the time. Service needs, for example, generally take priority over on-the-job training, and with pressing manpower deficiencies the Corpsman may be expected to give patient care tasks for which he does not yet have the expertise. These Corpsmen with only Corps school training and with no more than normal supervision on the job are the personnel who are administering the direct care to the patients in the Naval hospitals and other medical activities. These same Corpsmen, with this minimum of experience and training in patient care, are also required to provide first aid treatment to the injured in situations of stress and urgency.

A number of very basic questions may be raised about the training requirements for the Hospital Corpsmen. These questions include what must they know and how can they best learn what they must know in a reasonable span of time. In normal times, the Corpsman receives a sixteen-week course of instruction. Under emergency conditions that increase the demand for Corpsmen, the course may be reduced to twelve weeks. The program includes seven courses: Anatomy and Physiology; Principles and Techniques of Patient Care; First Aid and Minor Surgery; Preventive Medicien; Materia Medica and Toxicology; Nuclear, Biological and Chemical Warfare Defense; and Military Requirements. All students take the same course regardless of background and sex which affects future assignments. Thus, the Corps Waves receive the instruction which prepares for function on the battlefield, an assignment which they will not get. In turn, they fail to receive instruction in the care of women and children although their assignment is most apt to be to dependents' units.

The stated purpose of the Hospital Corps School is to provide instruction in the basic principles and techniques of direct patient care and first aid procedures. It, therefore, seems logical to develop a core curriculum around this purpose; to utilize the most modern automated individual and group instruction and testing devices; to establish standard criteria and dimensions for selection of students and certifying satisfactory completion of the program; to set forth faculty qualifications and requirements that will provide the kind of faculty needed to effectively accomplish the mission; and to devise feedback methods that provide information about the effectiveness of the program in meeting the established performance requirements in the field.

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II. SCOPE

This study was initiated to conduct research leading to the development of a more effective curriculum for the Basic Hospital Corps School. As an initial phase of a larger program, this study was intended to provide an assessment of the present curricula of the two basic Class A schools and to provide an analysis of how capably the recent graduate performs his job in the first duty station. This was accomplished by: (1) analysis of present curriculum and (2) field research in the first duty stations.

The main facilities concerned in this study were the two Hospital Corps Schools (Great Lakes and San Diego) and the first duty stations to which the recent graduates were assigned. The majority of graduates were assigned to large shore based Naval hospitals within the continental United States and these were the facilities which were given primary concern.

Ship duty, Field Medical Force, and foreign based operations were considered to be beyond the scope of this study.

In order to provide an assessment of the present curricula three areas had to be considered. One, to delineate the curriculum within each of the two Corps schools as it presently exists. Once the subject material was delineated, comparisons between the two schools were made to determine relative strengths and weaknesses of the individual programs. The second area which was investigated was concerned with the retention of material learned in the Corps, School by students and recent graduates. To implement this investigation, a test was constructed which covered each of the subject areas and reflected the relative proportion of time spent in each area. The data collected by this instrument allowed comparisons between retention of students of the two schools, an indication of how well the individual programs compared and also gave indications of how well material was retained over time. A third major research question which needed investigation concerned the source of knowledge as indicated by the students and recent graduates. This was assessed by means of a survey question which followed each of the retention test items and asked the students to indicate where they learned a specific item.

The field research involved two further areas. One was to determine the relative capability of the Corpsman in his first duty station and how capable he should realistically be expected to be under optimal training programs. In order to gather this information, a task scale was devised which was composed of the main duties which the Hospital Corpsman graduate is expected to fulfill in his first duty station. Judgments concerning current capabilities and estimates of improvement of capabilities desirable in the future were solicited. The dimension of the investigation was concerned with obtaining demographic information about the samples, individual attitudes, and amount of exposures to the students and graduating Corpsmen who were evaluated.

In summary this research was designed to provide information describing the Hospital Corps schools as they presently exist, how well the requirements of the first duty station are met by recent graduates and estimates of potential capabilities of graduates after improved training.

III. APPROACH

After consultation with Naval personnel, it was decided that Tasks I through IV could be best accomplished by the development of four types of data collection instruments and an analysis of the curriculum descriptions. This integrated program consisted of five different parts (one curriculum analysis and four instruments) each of which is discussed separately with respect to the following five topics:

1. Rationale
2. Development
3. Pretest
4. Revision
5. Administration

Results and discussion, which serve to integrate the various parts of this program into a meaningful whole, will be sections IV and V, respectively. Before presenting the detail relating to each of the subsections of the work, a short discussion of the sample is provided because of its general applicability to all phases:

Naval and Station Hospitals were selected for the sample pool since these facilities had a staff of sufficient number to warrant productive inclusion. It was determined that the sampling of the smaller dispensaries would have yieled marginally useful data in terms of existing time and cost restraints. Hospitals from all continental Naval Districts were the listed and numbered in order of their listing. A random number table as found in most statistics textbooks was consulted. The first seven station hospitals and the first four Naval Hospitals whose numbers appeared in the table were included in the sample. Unfortunately, the list provided identified two of the hospitals as station hospitals which were later found to be Naval Hospitals. The final sample then consisted of five station and six Naval Hospitals. In addition to the hospitals drawn at random, the San Diego and Great Lakes Hospitals were included at the request of the personnel from NMRI, Bethesda. It was also requested that the instruments

be administered to the faculty at each Corps School as well as to the hospital personnel.

HRB-Singer requested from the assigned liaison officer at each hospital within the sample that a given number of personnel from the ranks of the physicians, nurses, Senior Corpsmen, and Junior Corpsmen be made available for the purposes of completing questionnairs or for testing. The number of requested Senior Corpsmen within any given pay grade was specified. It was further requested that the Junior Corpsmen be selected on the basis that they fell within the following experience levels: 0-8 weeks, 9-24 weeks, and 25 weeks or more. The only additional request made was that the physicians, nurses, and Senior Corpsman who were selected were among those who worked closely with Junior Corpsmen.

The actual decision to include any given individual in the sample was left up to the liaison officers at the individual hospitals.

The number of individual subjects who responded to each measurement instrument will be identified in the discussion of those instruments.

A. CURRICULUM ANALYSIS

This subsection relates to the curriculum description. Since it is not a test instrument, only rationale and development are discussed.

1. Rationale

The present Class A Basic Hospital Corps School curriculum was evaluated with respect to four criteria. The two concerned primarily with assessment of the curriculum composition and presentation are discussed here. The other two, the retention examination and the associated survey forms are discussed in the next wo sections.

2. Development

A formal description of the course as presented in the "Navy Medical Department Formal Schools Catalog" (BUMEDINST 1500.9) and the "Catalog of Hospital Corps Schools and Courses" (BUMEDINST 1510.9A) was reviewed.

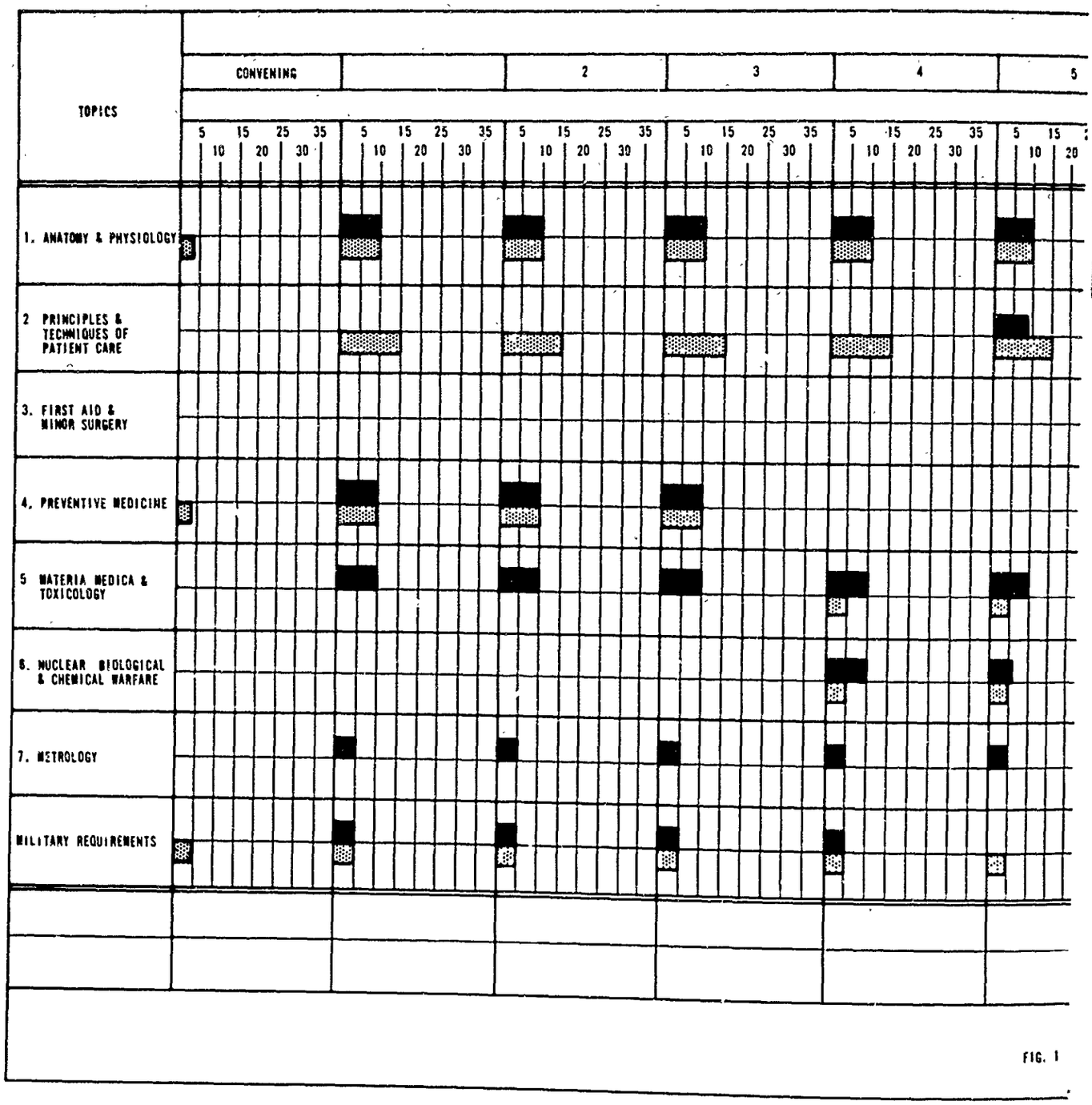

TOPICS
CONVENING
2
3
4
5
5 10 15 20 25 30 35
1. ANATOMY & PHYSIOLOGY
2 PRINCIPLES & TECHNIQUES OF PATIENT CARE
3. FIRST AID & MINOR SURGERY
4. PREVENTIVE MEDICINE
5 MATERIA MEDICA & TOXICOLOGY
6. NUCLEAR BIOLOGICAL & CHEMICAL WARFARE
7. METROLOGY
MILITARY REQUIREMENTS

FIG. 1

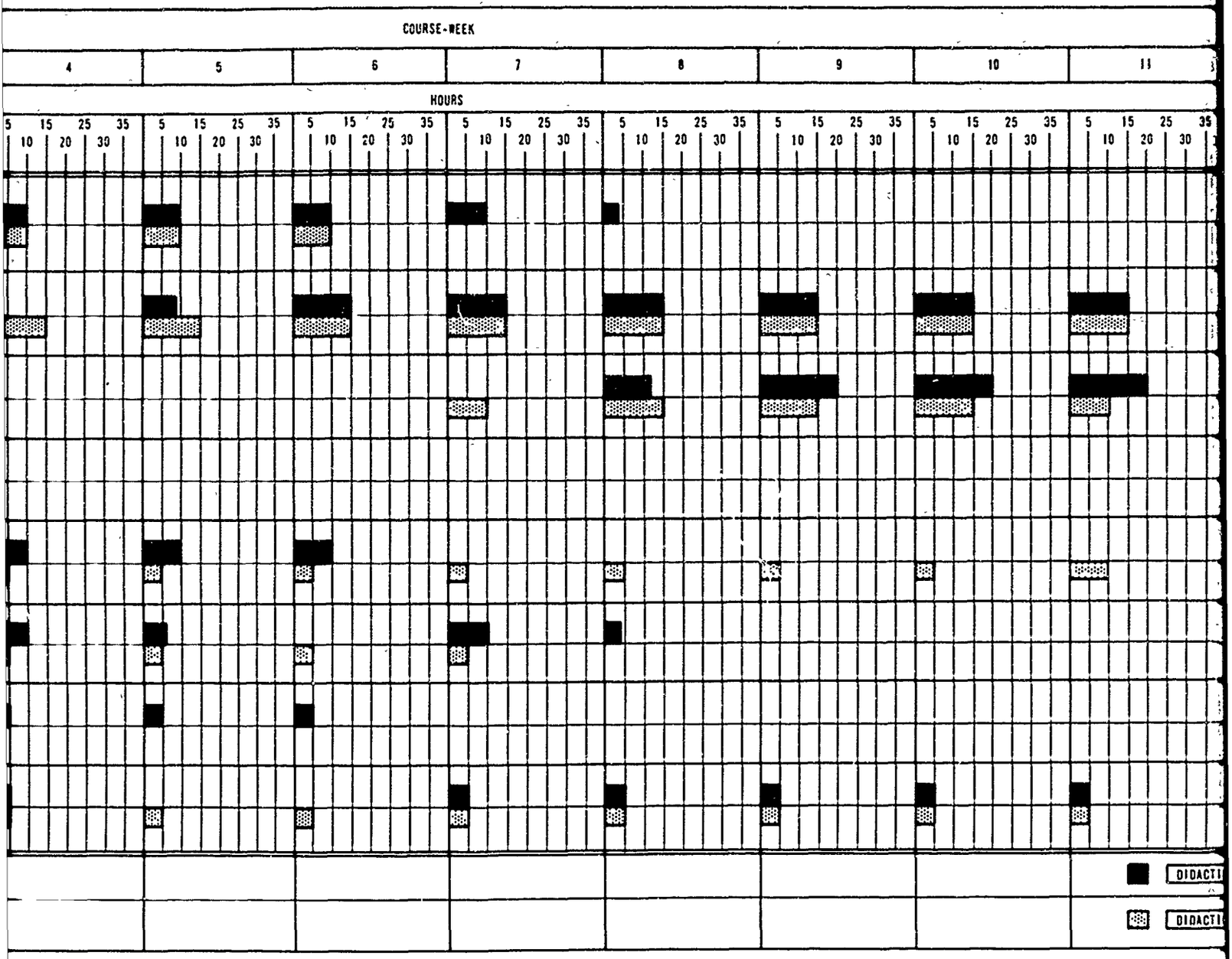
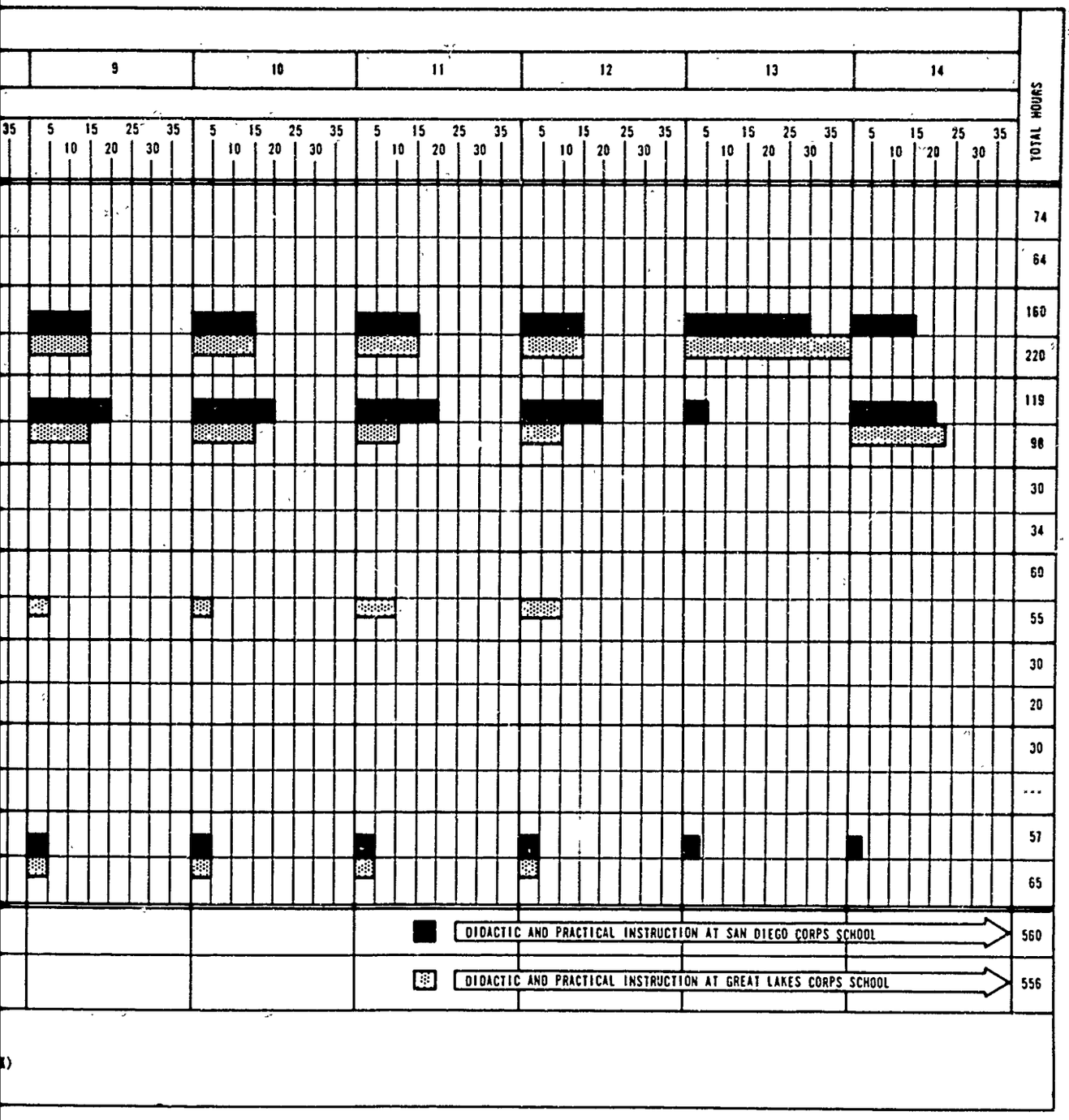


FIG. 1 CURRICULUM PRESENTATION SCHEDULE (DIDACTIC AND PRACTICAL HOURS PER COURSE WEEK)

B


9
10
11
12
13
14
35 5 15 25 35
10 20 30
TOTAL HOURS
74
64
160
220
119
98
30
34
60
55
30
20
30
...
57
65
DIDACTIC AND PRACTICAL INSTRUCTION AT SAN DIEGO CORPS SCHOOL
560
DIDACTIC AND PRACTICAL INSTRUCTION AT GREAT LAKES CORPS SCHOOL
556

Class schedules, lesson plans, study guides, work sheets, textbooks, instructors' and students' notes, quizzes, and examinations were requested from each of the two Corps schools. Unfortunately, not all this material was available. Preliminary examination of the material obtained revealed a curriculum breakdown into numerous topical subdivisions, each topic containing its own respective lesson plans and applicable teaching aids and examinations. The Great Lakes Corps School Class A course was subdivided into the following seven topics: Anatomy and Physiology; Patient Care; Preventive Medicine; Materia Medica and Toxicology; First Aid and Emergency Procedures; Nuclear, Biological, Chemical Warfare; Military Requirements. The San Diego Class A Corps School listed these same seven topics, but did not always use the same title designations. Also, the San Diego school supplemented the Class A course with an additional topic, Metrology. Military Requirements was not evaluated in this study, as it was not felt to be directly related to medical and para-medical considerations.

To analyze the curriculum presentation of each school, heavy reliance was placed on lesson plan content and the amount of time each school allowed for didactic and practical instruction. It compared the number of hours allotted for the teaching of each topic in the two schools. This illustration graphically presented the temporal limits of each topic within each Corps school, the total number of combined practical experience and lecture hours and the distribution of this per topic, and the relative emphasis each of the Corps schools placed on each topic on a week-by-week basis. No differentiation was made in this illustration between didactic and practical experience training.

The lesson titles of each Corps school were then listed by topic in the order of their presentation to the students. These two Corps school lists were juxtapositioned and the lesson title matrix, Figure 2, was constructed by drawing lines between columns connecting similar lesson titles.

From this matrix the lesson plan order was reorganized and reconstructed to produce the subject matrix, Figure 3. Corresponding lesson titles for each Corps school were placed adjacent to one another, the Corps school outlines were studied, and material from each lesson listed under its respective lesson title. Where additional information was needed, added content in the form of a subheading was included. Heavy black arrows were drawn between the two columns where corresponding lesson titles existed. The

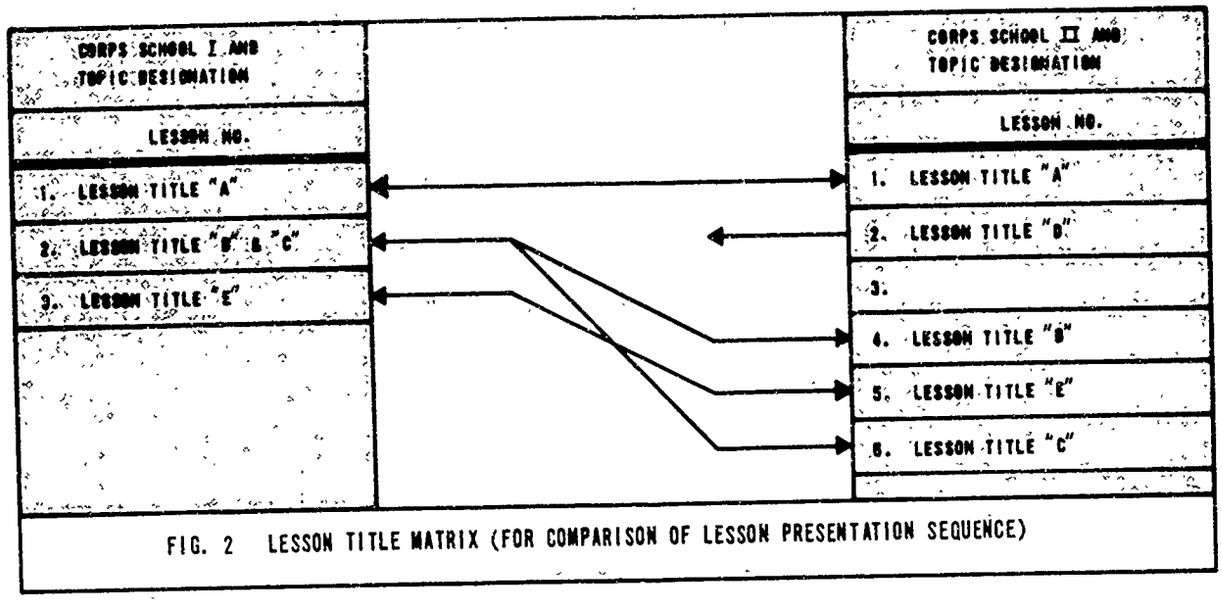


FIG. 2 LESSON TITLE MATRIX (FOR COMPARISON OF LESSON PRESENTATION SEQUENCE)

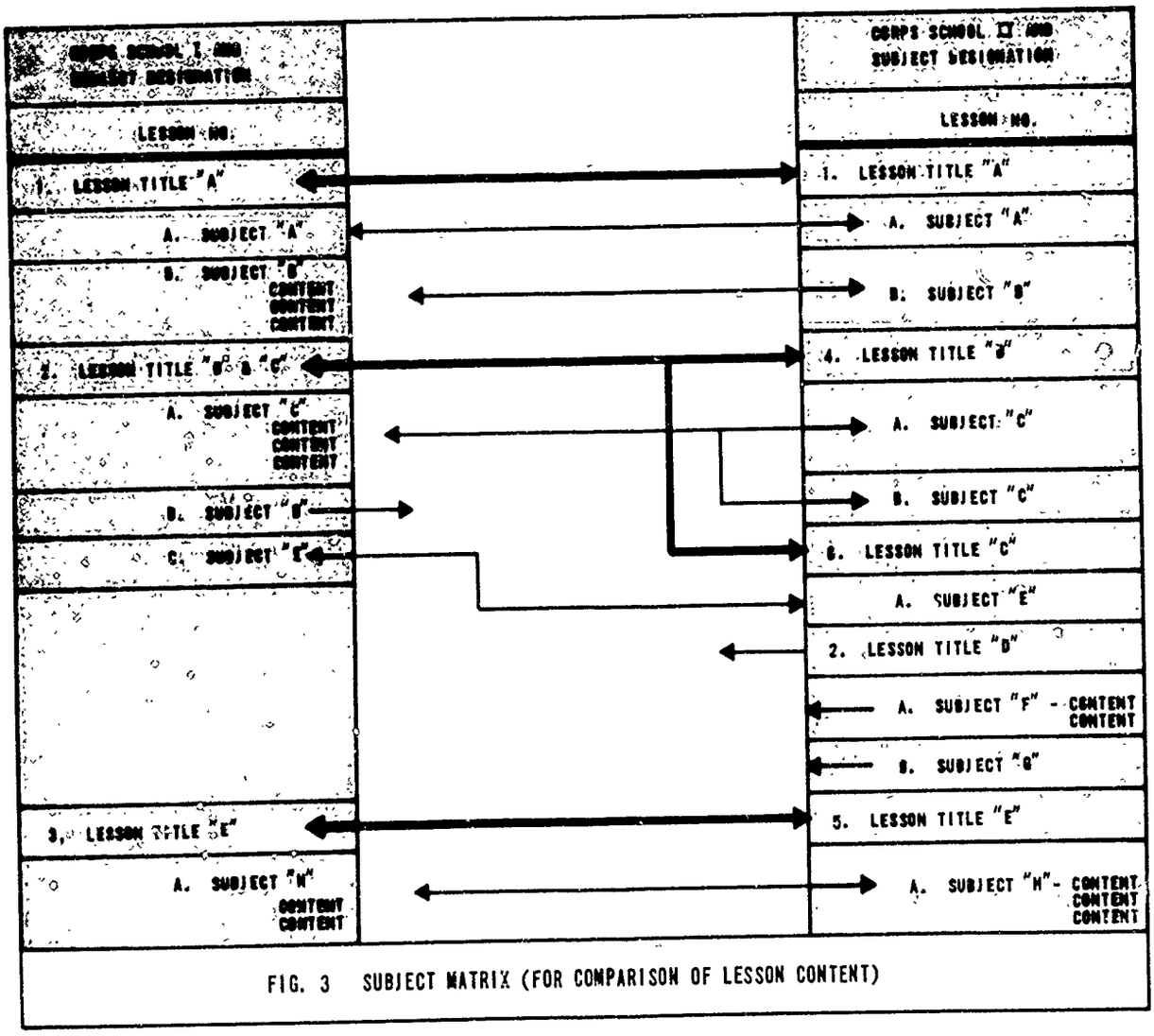


FIG. 3 SUBJECT MATRIX (FOR COMPARISON OF LESSON CONTENT)

two or more corresponding lesson titles as indicated by a single continuous arrow did not always share identical title designations primarily because their lesson titles were assigned by the school and for this study were matched on the matrix by content alone. A light arrow which dead-ended and did not connect a corresponding lesson title signified an entire lesson not discussed in the other Corps school curriculum.

Corresponding subject material was connected by a small black arrow. Where no corresponding subject was represented on the opposite column and thus absent in the other school curriculum, a small light unconnected arrow was drawn. This dead-ended arrow permitted the identification of information clearly showing a curriculum presentation unmatched by the other school. No subheading content was compared although the material was carefully examined and evaluated to determine if it was truly representative of the subject title and whether or not an equivalent context was provided in the other school subject area.

If a subject was discussed in one school and presented in an unrelated lesson in the other school, the arrow remained unconnected but identified with the appropriate corresponding lesson title number and subject letter.

In summary, an examination of the Curriculum Presentation Schedule revealed the apportioned time in a week-by-week presentation of material for each topic in the Class A course of the two schools. The Lesson Title Matrix demonstrated the similarities and differences in lesson material sequencing between schools and provided a preliminary display of the topic content. This curriculum composition and content was further analyzed, evaluated and compared through construction of the Subject Matrix. Both extent of detail and omitted or redundant material between and within schools was studied in the curriculum analysis.

B. RETENTION EXAMINATION

1. Rationale

A major part of this project was to specify and define the curriculum in terms of knowledge imparted to the students. An assessment such as this could provide information concerning what the student actually retained regardless of the manner and emphasis of presentation or the context in which it was

given. The retention test results, when co ıpared with formal course descriptions, would provide a basis for evaluating the effectiveness of the curriculum as it is now taught. Comparisc ıs of the subject areas taught at the schools could be made by noting variations in the information from the various courses retained by the students. Comparisons could also be made between the curricula of the two institutions providing Class A Hospital Corps schooling (Great Lakes and San Diego) by comparing the information retained by graduates of the two schools.

Finally, this instrument could be used to sample the Corpsman's retention of school material at various intervals of time since school graduation. The effectiveness of the instruction would be measured by the retention of the subject material over a span of time. It was assumed that performance on such a retention instrument would provide a valid specification of the amount of the curriculum content retained by the student.

2. Development

The retention examination was developed from the formal training materials of the two schools, i.e., texts, classroom lecture outlines and examinations. In order to present the material in a context familiar to the subjects and to utilize the most efficient method in terms of data reduction and interpretation, an instrument utilizing multiple choice questions was devised.

This examination was actually made up of six subtests and included questions from the major curriculum topics taught in the schools. The six areas were: Anatomy and Physiology, First Aid and Minor Surgery, Patient Care, Preventive Medicine, Materia Medica and Toxicology, and Nuclear, Biological, and Chemical Warfare. San Diego taught Metrology as a separate course; however, Great Lakes included it in Materia Medica and Toxicology. Military Requirements, which is the other subject taught, was not included because it is not directly related to patient care, the main concern of this project.

An initial item pool of approximately 1,100 questions was assembled. These items, taken from school training materials, represented essentially the whole scope of classroom and practical training at the two schools. An outline of each curriculum topic was constructed listing the major areas of study and the specific subjects within each area. Items were placed in these categories according to context.

The item pool was then reviewed by CDR Ouida Upchurch and LCDR Phyllis Elsas of NMRI and LT. Seth Brown of the Medical Corps. All of these personnel have had extensive experience with Hospital Corpsmen, LT. Brown having recently served as Training Officer at the Great Lakes Hospital Corps School. As a group they evaluated all items, and those found to be ambiguous, poorly worded, or otherwise inappropriate, were eliminated from the pool.

Items included for the pretest were chosen to be representative of the curriculum content. The number of test questions included for each curriculum topic was roughly proportional, the average number of instructional hours spent on that particular topic in the two schools. A total of 250 items were selected, composed of the following groups:

Topic	Average Percentage of Instructional Hours	Number Pretest Items
Anatomy and Physiology	14.1	32
First Aid	21.4	50
Patient Care	38.4	85
Preventive Medicine	6.6	20
Materia Medica and Toxicology	14.6	44
NBC Warfare	5.0	18
		250

The outline of curriculum content was used to select items within the topic areas, to insure that the examination contained questions covering as much course material as possible.

3. Pretest

The purpose of the pretesting was to evaluate the test items in terms of their difficulty and their discriminating power. The 250 items selected for pretesting were assembled into three forms for administration. The need to pretest as many questions as possible along with the requirement to evaluate the effect of the survey questions on test performance necessitated this division.

Pretest Forms A and B each contained one-half of the pretest item pool. The content of these two forms was identical in the number of questions from

each curriculum topic and also the number of items from each subject area within topics. Pretest Form C contained all 250 pretest questions.

Pretesting was conducted at the Great Lakes and San Diego Corps Schools in October, 1967, on the classes about to graduate at each institution. These personnel had completed all course work and were awaiting graduation and reassignment. Pretest examinations were randomly assigned to the 153 students, with 55 receiving Form A, 46 Form B and 52 Form C.

The pretest was administered using standard IBM machine scorable answer sheets to provide for rapid and accurate data reduction and interpretation. The position (A, B, C, or D) of correct answer alternatives was randomized in order to avoid position effects.

4. Revision

The analysis of the pretest data was performed utilizing the facilities of The Pennsylvania State University Examination Services Center. The answer sheets were scored by a Digitek scoring machine and cards were punched to indicate each person's part and total test score as well as individual responses.

The item analysis procedures used were the same as used by University instructors for evaluating their classroom examinations. An example of the information computed on each item is given below:

Item 9 Correct Answer is A

Responses	Lowest Fifth	Second Fifth	Middle Fifth	Fourth Fifth	Highest Fifth	Response Total
Omit	0	0	0	0	0	0
A	3	4	4	5	9	0
B	3	2	2	1	0	0
C	3	1	2	2	0	0
D	0	2	2	1	0	0
E	0	0	0	0	0	0
Total	9	9	10	9	9	0

Proportion of Total Group of 46 Students answering correctly = 0.543

Correlation between success on this question and total score on test = 0.536.

Item difficulty is represented by the percentage of students answering a question correctly.

The discrimination ability of each item was measured using two different criteria, scores on the part test (within each curriculum topic) and scores on the total test. To analyze discrimination ability, students were divided into five groups, based on the relevant criteria (total score or part score). Correlations were then made between item success and test success. High discrimination items were those for which high correlations between item SUCCESS and the relevant criteria were found. The distribution of responses in the various alternative answers was studied and distractor choices were either modified or eliminated.

One hundred and twenty-five questions were chosen for the final test form. Items were selected on the basis of their difficulty and discriminating power. A difficulty level of approximately 0.60 and a high discriminating ability were the criteria for selection. The outline of curriculum content was again used in the selection of items to insure a sample of items representative of the material presented to students in Corps school. The number of items selected from each curriculum topic was, as in the pretest form, weighted to reflect classroom hours devoted to that particular topic. 16 Anatomy and Physiology, 25 First Aid, 10 Preventive Medicine, 10 NBC Warfare, 21 Materia Medica and Toxicology, and 43 Patient Care questions constituted the final instrument.

5. Administration

The 125 questions selected for the final retention examination were combined with an equal number of survey items for formal testing. As in the pretest, the order in which the correct alternative appeared was randomized, and answers were recorded on IBM answer sheets.

The final form of the retention instrument was administered to a total of 361 Junior Corpsmen at eight Naval hospitals, five station hospitals, and the two Corps schools during the week of 13 November 1967. The Naval hospitals sampled were Chelsea, Massachusetts; Portsmouth, Virginia, Jacksonville

and Key West, Florida; Oakland and San Diego, California; St. Albans, New York; and Great Lakes, Illinois. The station hospital sample was composed of Bainbridge and Patuxent River, Maryland; China Lake and 29 Palms, California; and New London, Connecticut. Correspondence preceding the visits to the sample hospitals requested that Junior Corpsmen with various lengths of service since Corps school graduation be made available for testing. The groups tested at the Corps schools had completed all course work and were awaiting graduation. These personnel, 56 from Great Lakes and 42 from San Diego, comprised the time "0" group. The number of school graduates tested within each of the other time groupings is shown below.

0 - 8 weeks - 71
9 - 24 weeks - 169
25+ weeks - 23

One hundred seventy-eight of the out-of-school group had been graduated from the Great Lakes School, 85 from San Diego. Instructions provided with the combined retention and survey instrument are found in Appendix 1.

C. SURVEY QUESTIONS

1. Rationale

In order to effectively evaluate the Hospital Corps school curriculum, an assessment which delineates the source(s) where students learned retention item material was a requisite. The method used for obtaining this assessment was to ask a survey question following each item in the retention test given to graduate and neophyte corpsmen.

2. Development

Survey items were developed which would delineate the sources of specific information. The question stem and the response were as follows:

I learned this material:

a. In Corps school lecture
b. In Corps school text readings

c. In Corps school practical experience

d. Outside Corps school

e. I don't know the answer

3. Pretest

The pretest was conducted in the two Corps schools. It was intended to answer: (1) would the survey have a negative effect on retention test performance, (2) would the survey discriminate, and (3) were the responses appropriate? The retention test, as previously discussed, was presented in three forms--two with the survey and one without. The survey items were included in Pretest Forms A and B of the retention test. No survey items were included in Pretest Form C.

For the two groups who took Forms A and B, a higher average score was observed. This was taken as evidence that the inclusion of survey items did not adversely affect performance.

4. Revision

Because the pretest revealed considerable difference in experience between the Ward Corpsman and the student in school, it was decided that two separate surveys should be developed. Form A of the survey and retention test was developed for students completing their last week of Corps School. Form B of the survey and retention test was prepared for inexperienced Corpsmen at their first duty station. The two forms retained the same stem, but responses differed.

(Final A)

Students in Corps School

I learned this material:

a. In Corps school lecture

b. In Corps school readings

c. In Corps school practical experience

d. Films or other visual aids

e. Outside Corps school

(Final B)

Neophyte Post Corps School

I learned this material:

a. In Corps school

b. Formal training at this hospital

c. Practical experience in this hospital

d. Before I became a Corpsman

With these revisions the retention-survey instrument was better able to assess a broader and more definable scope of school and OJT training.

5. Administration

As in the pretest, instructions were printed on the test booklet, and, except for the examples, were the same for both Forms A and B.(see Appendix 1). Also, the instructions were read aloud to the examinees.

D. TASK SCALE

1. Rationale

This study was intended to provide an analysis of how well the expected training meets the present prescribed performance requirements of the neophyte Corpsmen. These performance requirements were to be in the form of specific tasks which Corpsmen are expected to perform in actual hospital settings. In addition, the study was to provide data comparing the present performance of the Corpsmen with what was seen as their potential capability if optimum training were to be provided. The study was charged with the task of determining whether the discrepancies between the perceived performance and the desired performance were consistent for the various tasks. This was done in order to gauge the generality of the need for improved task performance across the various types of duty stations.

To accomplish the above goals, it was necessary to develop a list of tasks which were actually performed by Junior Corpsmen in routine hospital duties. These tasks could then be used in rating these Corpsmen in their job performance. A Likert-type scaling device was selected on the basis that it is a flexible measuring technique established as both sensitive and reliable. In addition, the use of this technique allowed both the perceived and the actual performance level on each task to be measured using the same instrument.

In addition to the above, a method was required to assess the importance of the listed tasks. This was necessary in order to help decide whether a given discrepancy between the "is now" and "is hoped for" judgments on the Task Scale in normal usage really revealed an important deficiency in the Junior Corpsman's training.

2. Development

A list of 178 tasks expected of Junior Corpsmen in their hospital duties was extracted from (1) the Handbook of the Hospital Corps, (2) a proposal entitled "Proposal for the Establishment of a Nursing and Ward Management by CDR O. C. Upchurch, (3) interview data, and (4) from the extensive nursing experience of one of the HRB-Singer staff members. All identified tasks were included in the scale, in order to be as comprehensive as possible, and at the same time avoid selection bias. These tasks were organized into twenty-one task categories. Each category contained tasks which were stated in concrete specific terms so that no additional definition was required. Further, the tasks within each category were functionally or conceptually related. Those categories shall be referred to hereafter as Functional Task Categories.

The tasks were then listed by category, and a five point Likert scale ranging from "very incapable" to "very capable" was used with each item. Instructions for the user were developed which described each of the five points on the scale in terms of task performance and trainability. Also, examples were provided to further familiarize the user with the scaling technique. The user was instructed to mark each item twice; he was to place a '1' in the slot which he felt best described the Corpsman's present performance, and a "2" in the space describing how they thought he could be expected to perform the task, given optimum training.

In order to assess the importance of each of the tasks, a separate Task Scale was modified so that the instructions asked the rater to rate each task on a five point scale ranging from a rating of "1" being "Unimportant" to a rating of "5" for "Important." Only one rating was to be made for each item. All tasks listed on this scale were identical to those listed in the scale above.

3. Pretest

The task scale was administered to a sample of 12 physicians, 20 nurses, and 22 Senior Corpsmen at the Philadelphia Naval Hospital. In pretesting, answers to the following questions were obtained:

a. Were the instructions adequate and easily understood?

b. Would there be differences between judgments concerning the various tasks?

c. Was there agreement between raters as to the general level of capability of the neophyte corpsmen?

d. Could the technique be administered within the time constraints imposed by using on-duty personnel?

4. Revision

The instructions were found to be confusing in some respects, and minor revisions were made to clarify them. It was found that there were differences between tasks on both the "1" and "2" judgments. Inspection of the data indicated that considerable agreement existed between raters for any given task. The scale was completed by most raters within thirty minutes, and by all raters in less than one hour.

5. Administration

The Task Scale was administered to 52 physicians, 128 nurses, and 313 Senior Corpsmen, (a Senior Corpsman is defined for the purpose of this study as being a Petty Officer) stationed at one of thirteen selected Naval or Station Hospitals throughout the continental United States.

The scale was given to nurses, Senior Corpsmen and physicians who were assembled in groups and asked to complete the forms. It was not always possible to assemble the physicians in groups, so the scale was given to individual physicians to be completed at their convenience sometime during the day the testing was in progress. One hour was the maximum time required for the completion of the scale.

The Task Scale which had been modified to rate the importance of the tasks was administered individually to four physicians and, in a group, to nine nurses, eleven Senior Corpsmen (1 CPO, 3 HM1, 7 HM2), and 27 HA's or HN's.

The Junior Corpsmen were asked to complete the form because they were in a position to know which tasks they were actually asked to perform and how important this performance was to their being able to carry out their duties effectively. No demographic data were taken from this group.

All the above personnel were stationed at the Quantico, Virginia, Station Hospital. This site was selected on the basis that it was not included in

either the sample proper or in the pretest sample, and in addition, liaison with this hospital had already been established during the interview phase of the study.

E. QUESTIONNAIRES

1. Rationale

Four questionnaires were developed; one each for nurses, physicians, Senior Corpsmen and Junior Corpsmen. In order for the retention test data to be of optimal value, it was necessary to have a certain amount of demographic data. The questionnaires covered only that material necessary for an adequate sample description to insure that overlap between the HRB-Singer effort and NMRU No. 4's responsibilities would not occur. Care was taken to insure that data would be interlocking and useful, not redundant. The questionnaires were intended to provide data for two areas. First, demographic data were required to check the representativeness of the sample, and, in some cases, to serve as potential weighting factors for the opinion data. Second, data on several general attitude questions were required and developed.

2. Development

The basic content of the questionnaires was obtained by a series of orientation visits to various Station and Naval Hospitals. These visits served to acquaint the research team with the procedures and problems of conducting research at Naval institutions. They also provide the opportunity, through a series of unstructured interviews, to determine the problem area which required systematic measurement. The procedure led to the development of four Questionnaires: Junior Corpsmen (Corps School graduates), Senior or Rated Corpsmen, Physicians, and Nurses.

The Junior and Senior Corpsmen Questionnaires were, for the most part, developed and treated separately as the nature (of many questions) was quite different. The Physicians and Nurses Questionnaires, however, were developed and treated as a unit, because the type of information required from the two groups was highly similar.

The content of each questionnaire stems from preliminary, unstructured interviews with physicians, nurses, and hospital corpsmen of all ratings. This was deliberate in order not to develop a set of biased question areas. After the preliminary interviews, questions were developed for each of the four groups. Whenever possible, structured questions were written. The questionnaire and the other instruments were designed to be self-administering.

The draft questionnaires were submitted to the NMRI contract monitor for examination and contribution to content. A meeting between the team member responsible for the final version of the questionnaires and the contract monitors was held, and revisions to the draft instruments were agreed upon. The revisions were incorporated, and the instruments were ready for the pretest phase.

3. Pretest

The Questionnaires along with the other instruments were all pretested simultaneously during November, 1967, at Philadelphia Naval Hospital. Groups of Nurses, Physicians and Corpsmen of all ratings were brought into a classroom and the questionnaire was administered. The test sample consisted of 20 nurses, 12 doctors, 22 Senior Corpsmen, and 44 Junior Corpsmen.

During the pretest phase, it was determined that enlisted personnel, nurses and physicians -- where possible -- could be obtained in groups and brought to a central location for the administration of the instruments. For the pretest the physicians could not be gathered in a group and the instruments were given to them on arrival at the facility, to be filled out and returned prior to the team's departure.

4. Revision

During the pretest, careful note was made of any confusion on the part of the respondents. Several questions were rephrased to eliminate ambiguities. Testing and revision of the oral instructions, required to brief the respondents prior to administering the instruments, was also accomplished.

5. Administration

Questionnaires were administered at the several selected station and Naval hospitals by members of the research team. Procedures developed and tested during the pretest were employed uniformly by all team members. For the Junior Corpsmen measured at the hospitals, the questionnaire preceded their taking the retention test. For the Senior Corpsmen, physicians, and nurses, it followed the Task Scale. Corps School graduating students were not administered a questionnaire.

IV. RESULTS AND DISCUSSION

A. CURRICULUM ANALYSIS

An analysis of the topic Nuclear, Biological, Chemical Warfare (NBC) was included in this report to demonstrate the curriculum analysis procedures employed by the examiner. Each of the other six Corps school topics were also evaluated in the described manner. NBC was chosen as the demonstration topic because (1) it contained inter-school comparison characteristics common to most of the other topics, (2) it was brief in lesson content and time allotted for presentation, thus lending itself to a comprehensive but concise and thorough explanation, and (3) the performance of the graduates of one of the Corps schools was significantly better ($p' < .05$) than that of the other Corps school on the subtest of the Retention Instrument.

An examination of the Curriculum Presentation Schedule (Figure 1) revealed a breakdown of the allotted time for NBC instruction within each of the two schools. The bar corresponding to the topic showed that both schools introduced the student to NBC in the fourth course week. It further indicated that the San Diego Corps School taught this topic ten hours during the fourth course week, six hours during the fifth course week, omitted any NBC instruction in course week number six, resumed again for ten hours in the seventh course week, and terminated it with four hours of instruction in the eighth course week. The extreme right, "Total Hours" column, revealed 30 didactic and practical hours of NBC at the San Diego Corps School. By comparison, the Great Lakes Corps School allocated five hours per week for the consecutive course weeks number five through seven, totaling twenty didactic and practical hours. Sequence of presentation and course content indicated that there was no informational disparity; however, San Diego did spend one half again as much time on the subject than Great Lakes.

The Lesson Title Matrix, Appendix 2, indicated lesson presentation sequencing. This diagram listed the lesson titles for each topic in the order in which they were presented to the students. The first lesson, Biological Warfare Defense, which was taught at the beginning of the topic at the San Diego Corps School, contained material corresponding with lessons number 10, 11, and 12 at the Great Lakes Corps School. Similarly, the material in the second

lesson at the San Diego Corps School corresponded with the material taught during the seventh, eighth, and ninth lessons at the Great Lakes Corps School. Furthermore the first NBC lesson at the Great Lakes Corps School contained material that was not presented at the San Diego Corps School. This was indicated by a dead-ended arrow.

A brace ( ) on either column, when connected to a corresponding single lesson title, indicated only that the material of the several titles within the brace was covered under a single title in the other school. One condition which warranted particular attention involved two inter-connected braces. This situation was the case in the fourth, fifth, and sixth lessons of the San Diego Corps School and its corresponding third and fourth lessons of the Great Lakes Corps School. Examination of the titles showed that the material covered in the lessons was very s milar but presented in a different conceptual structure. At the San Diego Corps School medical considerations of nuclear detonations were discussed, first with regard to blast effects, second with regard to thermal effects, and third according to ionizing radiation effects. Each of these three lessons dealt with its own respective zones of destruction and comparison of weapon yields. The Great Lakes Corps School, used a different lesson structure, which included the medical considerations of blast effects, thermal effects, and ionizing radiation in one lesson and continued through the next lesson in a discussion of zones of destruction and comparison of weapon yields. Interconnected braces, therefore, usually indicated lessons of equivalent content but of different conceptual structure and/or different lesson title wording.

Appendix 2 illustrated only lesson sequencing comparisons between schools and not a detailed description of the curriculum content. The Subject Matrix, Appendix 3, was essentially of the same basic design as the Lesson Title Matrix except for the rearrangement of the lesson titles and inclusion of more curriculum detail. The lesson titles were listed out of sequence of their presentation to the students in order to simplify the connection by arrows of corresponding subject material which was taught in one school and the other. The heavy arrows in this matrix served the same function as those lines used in Appendix 2.

Of particular interest in this illustration were the light connecting arrows and the light dead-ended arrows. Each light connecting arrow indicated that particular subject within one Corps school curriculum which was closely related to a particular subject in the other Corps school. The light dead-ended arrow

denoted subject material not taught anywhere within the instruction of that topic in the other corps school.

The NBC Subject Matrix showed that the Great Lakes Corps School introduced its students to Nuclear, Biological, and Chemical Warfare through a history of nuclear warfare and history plus background of chemical and biological warfare. Although the San Diego Corps School did discuss this material briefly in the introduction to each of its individual biological, chemical, and nuclear warfare lessons, seemingly sufficiently greater emphasis was placed on the subject in the Great Lakes Corps School to warrant its diagraming as an unmatched subject.

The investigator exercised acumen in his evaluation of identified subject material. The history and background of NBC was an example of material requiring this judgment. History and background of NBC served as introductory material and was used as a device to establish student interest in the course. It was apparently not an essential curriculum component. Only those subjects of importance omitted in one school curriculum and presented in the other were isolated for examination.

By referring to the NBC Subject Matrix, the following listed items were revealed as unmatched subjects of significant importance.

The San Diego Corps School lesson plans (LP) alone revealed instruction in:

1. Description of synthetic chemical compounds (LP1)
2. Description of biological warfare contamination marker (LP1)
3. Description of five basic types of bursts with respect to blast effects (LP3)
4. Description of five basic types of bursts with respect to thermal effects (LP4)
5. Measurement of radiation (LP6)
6. Measuring instruments (LP6).

The Great Lakes Corps School lesson plans (LP) alone revealed instruction in;

1. Treatment of nuclear casualties (LP5)
2. Measure for self-protection (LP6)

Each of the seven medical topics were analyzed in the previously described manner and the findings of the investigator are presented. The following subject material (1) can be found in the lesson plans of the Corps school under which it is listed, (2) is considered of major importance by the analyst, and (3) is not shown in the lesson plans of the other school.

ANATOMY AND PHYSIOLOGY

San Diego Corps School - 74 hours

1. Prefixes and corresponding anatomical parts (LP-3)
2. Prefixes and corresponding terms (LP-3)
3. Suffixes and corresponding terms (LP-3)
4. Muscle terms commonly used (LP-14/15)
5. Classes of muscles (LP-14/15)
6. Factors affecting respiration (LP-30)
7. Types of breathing (LP-30)

Great Lakes Corps School - 64 hours

1. Anatomical postures (LP-3)
2. Anatomical planes (LP-3)
3. Reproduction (LP-61/62)

FIRST AID AND EMERGENCY PROCEDURE

San Diego Corps School - 119 hours

1. Closed chest cardiac massage (LP-3)
2. Relief of pain without drug therapy (LP-5)

3. Poisoned wounds (LP-6)
4. Maxillofacial injuries (LP-9)
5. Neck Injuries (LP-9)
6. Emergency tracheostomy (LP-9)
7. Blast injuries (LP-12)
8. Injuries to the extremities (LP-12)
9. Contusions (LP-13)
10. Short distance hand carries (LP-17)
11. Short distance litter carries (LP-17)
12. Gastrointestinal tract emergencies (LP-19)
13. Hemorrhoids (LP-19)
14. Respiratory emergencies (LP-19)
15. Diseases of the eye (LP-19)
16. Diseases of the skin (LP-19)
17. Nervous system emergencies (LP-19)
18. Persistant hiccups (LP-19)

Great Lakes Corps School - 98 hours

1. Blood clotting time (LP-2)
2. Sites of injection for blood volume expanders (LP-6)
3. Inflammation and infection defined (LP-12)
4. Classifications of inflammation and infection (LP-12)
5. Causes of inflammation and infection (LP-12)
6. Symptoms of inflammation (LP-12)
7. Symptoms of infection (LP-12)
8. Treatment of inflammation and septic wound (LP-12)
9. Foreign bodies in the stomach (LP-11)
10. Foreign bodies in the skin (LP-11)

PREVENTIVE MEDICINE

San Diego Corps School - 30 hours

1. Methods of destroying organisms (LP-2)
2. Rodent infestation evidence (LP-8)
3. First aid for internal poisoning victims (pesticides) (LP-8)

Great Lakes Corps School - 34 hours

1. Disease incidence (LP-3)
2. Internationally quarantinable disease (LP-3)
3. Portal of exit from source (LP-4)
4. Susceptibility of host (LP-4)
5. Contact interviewing for venereal disease (LP-9)
6. Water supply sanitation (LP-10)
7. Sewage disposal sanitation (LP-10)
8. Refuse disposal sanitation (LP-10)
9. Sanitation of living spaces and service facilities (LP-10)
10. Mess gear and cooking utensils sanitation (LP-13)
11. Water supply sanitation in field (LP-13)
12. Sewage disposal sanitation in field (LP-13)

NUCLEAR, BIOLOGICAL, and CHEMICAL WARFARE

San Diego Corps School - 30 hours

1. Description of synthetic chemical compounds (LP-1)
2. Description of biological warfare contamination marker (LP-1)
3. Blast effects of five types of bursts (LP-4)
4. Thermal effects of five types of bursts (LP-5)
5. Measurement of radiation (LP-6)
6. Measuring instruments (LP-6)

Great Lakes Corps School - 20 hours

1. Treatment of nuclear casualties (LP-5)
2. Measure for self protection (LP-6)

MATERIA MEDICA AND TOXICOLOGY

San Diego Corps School - 60 hours

1. Aqueous solutions of pharmaceutical preparations (LP-1)
2. Aqueous suspensions of pharmaceutical preparations (LP-1)
3. Nonaqueous solution of pharmaceutical preparations (LP-1)
4. Solid preparations of pharmaceutical preparations (LP-1)
5. Basal anesthetic drugs (LP-14)
6. Antihypertensive drugs (LP-19)
7. Antineoplastic drugs (LP-28)
8. Biologicals defined (LP-29)
9. Antitoxin drugs (LP-29)
10. Toxin drugs (LP-29)
11. Vaccines (LP-29)
12. Common poisons and their antidotes (LP-31)

Great Lakes Corps School - 55 hours

1. General classification of drugs (LP-8)
2. Antimalarial drugs (LP-44)
3. Diagnostic drugs (LP-46)
4. Miscellaneous drugs (LP-47)
5. Introduction of poisons into the body (LP-50/51/52)
6. Poison control center (LP-50/51/52)

METROLOGY

San Diego Corps School - 30 hours

1. Roman Numerals (LP-1)
2. Types of pharmaceutical percent preparations (LP-5)
3. Steps in working pharmaceutical percent problems (LP-5)
4. Steps in working a percentage problem where the amount of active ingredient is known and the percent is desired (LP-5)
5. Rounded off equivalents (LP-6)
6. Dosage calculation (LP-6)

Great Lakes Corps School - not a formal topic, but subject material is presented in Materia Medica and Toxicology.

PRINCIPLES AND TECHNIQUES OF PATIENT CARE

San Diego Corps School - 160 hours

1. Other manners of admission of patient (LP-6)
2. Placing a patient on intake and output (LP-11)
3. Procedure for taking axillary temperature (LP-13)
4. Comfort devices (LP-15)
5. Types of safety devices (LP-15)
6. Incontinence defined and causes (LP-17)
7. Nursing care of incontinent patient (LP-17)
8. Normal elimination (LP-18)
9. Assisting patient with tub bath (LP-23)
10. Assisting patient with shower (LP-23)
11. Closed chest drainage (LP-45)
12. Complications of closed chest drainage (LP-45)
13. Ward management responsibilities (LP-59)
14. Maintenance of ward supplies and equipment (LP-59)

Great Lakes Corps School - 220 hours

1. Importance of knowing medical terminology and abbreviations (LP-2)
2. Methods of learning (LP-2)
3. Patient transfer procedures (LP-15)
4. Patient discharge procedures (LP-15)
5. Importance of skin care (LP-7)
6. Terms related to rectal treatments (LP-19)
7. Charting AM and PM care (LP-12)
8. Units of measure used in medication dosage (LP-31)
9. Method of converting dosages (LP-31)
10. Liquid measurements (LP-31)
11. Medication and treatment board (LP-31)
12. Common routes of administration or parenteral medication (LP-31)
13. Dangers common to parenteral administration (LP-31)
14. Psychological preparation of the patient for parenteral medication (LP-31)
15. Ampules (LP-35)

B. RETENTION EXAMINATION

Final test answer sheets of the Retention Examination were machine-scored and the results punched onto IBM Cards for data reduction. A summary of the computer analysis of these data is given below:

Number of subjects	361
Number of items	125
Test Mean	75.28
Standard Deviation	14.39
Mean Difficulty of Items	0.602

Average item-total correlation	0.335
Standard error or correlation	0.053
Estimated inter-item correlation	0.112
Kuder-Richardson 20 reliability	0.883

Part and total test means for the various hospitals and the two Corps schools are presented in Appendix 4.

Comparisons of the graduates of the two Corps schools were made to assess differences in part and total test performance. An analysis of variance was performed comparing total test performance of Great Lakes and San Diego School students about to graduate with school graduates with 0-8, 9-24, and 25 or more weeks of experience. A summary of the analysis follows:

TABLE 1 ANALYSIS OF VARIANCE
SCHOOL VS. TIME[1]

SOURCE OF VARIATION	DF	MEAN SQUARE	F
SCHOOL	1	50.6000	0.2694
TIME	3	2930.7333	15.6055*
ERROR	35	187.8017	
*P<.05			

STUDENT STATUS	GREAT LAKES	SAN DIEGO
ABOUT TO GRADUATE	80.88	86.07
0-8 WEEKS AFTER GRADUATION	76.68	70.94
9-24 WEEKS AFTER GRADUATION	72.62	72.72
25 WEEKS OR MORE AFTER GRADUATION	67.80	64.75

[1] A PRELIMINARY ANALYSIS INDICATED THAT THE INTERACTION TERM WAS NOT SIGNIFICANT, AND WAS THUS INCLUDED IN THE ERROR TERM FOR THIS ANOVA.

The negative effect of time on retention was found to be significant at the .05 level.

To determine where significant performance decrements occurred between the time means, an extension of Duncan's New Multiple Range Test for the case of unequal n's was applied. Appendix 5 provides summary data from this analysis.

Significant differences in mean scores were obtained between all experience level groups except between the 0-8 week and the 9-24 week groups. This indicates that, after an immediate loss following graduation, the Corpsman's retention of school material remains fairly stable for a period of approximately six months, then begins to decline significantly.

The examination of differences between students and graduates of the two Corps schools was extended to an analysis of performance in the six curriculum topic areas. A series of t tests was performed on the six part tests comparing students and graduates of the two schools on their performance in the various subjects. Summary information of these analyses is shown below.

TABLE 2 t-TESTS ON PART TEST MEANS

SUBJECT	SCHOOL	MEAN	t
A&P	GREAT LAKES SAN DIEGO	8.34 9.64	4.396**
FIRST AID	GREAT LAKES SAN DIEGO	14.97 17.37	7.2149**
PREVENTIVE MED.	GREAT LAKES SAN DIEGO	5.73 5.52	1.0344
NBC WARFARE	GREAT LAKES SAN DIEGO	4.36 4.80	2.2008*
MM&T	GREAT LAKES SAN DIEGO	11 44 11.75	0.8196
PATIENT CARE	GREAT LAKES SAN DIEGO	30.60 27.14	4.4141**
*P < .05 **P < .01			

Although a difference was not noted between Great Lakes and San Diego graduates on total test performance, four of the six subtests showed significant differences between institutions. San Diego graduates displayed superior performance in Anatomy and Physiology, First Aid, and NBC Warfare, while Corpsmen trained at Great Lakes performed significantly better in Patient Care. No differences were noted in the areas of Materia Medica and Toxicology or Preventive Medicine.

The preliminary interviews with personnel at the Corps schools provided information indicating that the duty station a Corpsman was assigned to after school graduation might have an effect on the Corpsman's retention of school material. More specifically, it was hypothesized that the experience received at station and Naval hospitals differed sufficiently to cause differential performance on the retention examination.

An analysis of variance was run comparing total examination scores of Corpsmen with 0-8 weeks 9-24 weeks and 25 or more weeks of experience at station and Naval hospitals. No significant differences between Corpsman performance at the two types of hospitals or in the various time groupings were noted. This lack of variation between Corpsmen at station and Naval hospitals indicates that, at least for these two types of facilities, duty assignment after Corps school graduation was not a factor in the retention of school subject material.

The following table presents a comparison between the performance of graduates and the performance of those about to graduate from each of the two Corps schools.

TABLE 3 COMPARISON OF CORPS SCHOOL GRADUATES AT VARIOUS EXPERIENCE LEVELS WITH STUDENTS ABOUT TO GRADUATE FROM THE SAME SCHOOL

SUBJECT AREA	0-8 WKS FROM GRADUATION		9-24 WKS FROM GRADUATION		25 WKS OR MORE FROM GRADUATION	
	GREAT LAKES	SAN DIEGO	GREAT LAKES	SAN DIEGO	GREAT LAKES	SAN DIEGO
ANATOMY AND PHYSIOLOGY	90.77	82.55	93.13	82 55	84 02	62 94
FIRST AID	98.06	84.50	100.19	85 16	97 66	90 48
PREVENTIVE MEDICINE	99.17	80.12	86.82	77.21	80.23	71 10
NBC WARFARE	78.28	82.51	72.08	83.06	60.76	66.12
MM & T	76.94	77.47	78.18	82.93	76.58	81.28
PATIENT CARE	94.60	84.52	90.40	87.77	83 92	78.29

For each subject area listed on the left of Table 3, the relative scores of three experience groups, i.e., those who had been graduated from Corps school 0-8 weeks prior to testing, 9-24 weeks prior to testing, and 25 or more weeks prior to testing, are displayed. Scoring is based on a 100 percent mark which is the mean of scores in that subject area achieved by the students about to graduate from Corps school. The percentage score expressed then is the mean number correct in each subject area for each experience group divided by the mean number correct in this same subject area by those still in school and multiplied by 100. These comparisons provide a means of examining differences in retention between curriculum topics within each school.

Examination of the Great Lakes data reveals that First Aid seems to be retained better over time than any of the other subjects. Performance on the NBC Warfare subtest, on the other hand, was not nearly as consistent, the 0-8 week group dropped to 78.28 percent, the 9-24 week to 72.08 percent and the 25 week group to 60.76 percent of the in-school group. Materia Medica and Toxicology shows a fairly large initial drop immediately after graduation but retention remains fairly consistent through the 24-plus weeks group.

For the San Diego graduates performance in First Aid and Materia Medica and Toxicology was most consistent over time while Anatomy and Physiology and NBC Warfare showed the greatest differences across the experience groups.

The San Diego graduates exhibited a greater initial drop in performance after graduation than did the Great Lakes group and this trend appeared to continue through the experience groups.

C. SURVEY QUESTIONS

In the retention examination, all respondent data was divided into a Form A and Form B group irrespective of school attended. Students in their final week of training at both Hospital Corps schools comprised the group taking Form A. Recent graduates from the two schools 0-8, 9-24, and 25 or more weeks comprised the group taking Form B. The mean percentage response of the two groups to survey question alternatives is shown on the following page.

TABLE 4 MEAN PERCENTAGE RESPONSES TO ALTERNATIVES OF SURVEY QUESTIONS ("I LEARNED THIS MATERIAL:")

FORM A STUDENTS IN FINAL WEEK OF SCHOOL		FORM B RECENT GRADUATES	
MEAN PERCENTAGE RESPONSE	ALTERNATIVES	MEAN PERCENTAGE RESPONSE	ALTERNATIVES
68	A IN CORPS SCHOOL LECTURE	84	A. IN CORPS SCHOOL
17	B IN CORPS SCHOOL READINGS	2	B. FORMAL TRAINING IN THIS HOSPITAL
3	C. IN CORPS SCHOOL PRACTICAL EXPERIENCE	5	C. PRACTICAL EXPERIENCE IN THIS HOSPITAL
3	D. FILMS OR OTHER VISUAL AIDS		
9	E. OUTSIDE CORPS SCHOOL	9	D. BEFORE I BECAME A CORPSMAN

The mean percentage response was obtained for an alternative (A, B, C, D, or E) by the summation of the percent figure for each item divided by the number of items. Response to material learned "outside Corps school" (Form A, alternative E) or "before I became a Corpsman" (Form B, alternative D) was identical. As had been expected, students in their final week of school indicated more test-related information was learned in school than did recent graduates. However, this difference was accounted for by Corpsmen responses to alternatives B ("formal training in this hospital") and C ("practical experience in this hospital") of Form B.

Data on Forms A and B by subtest are illustrated in Table 5.

The data were also examined by separating each survey form into school groups. In that manner, there were two Form A and two Form B groups. The mean percentage responses for each alternative are found in Table 6. The 12 percent difference between the A ("in Corps school lecture") alternative for the two schools on Form A indicate that San Diego students thought they learned a greater percentage of the tested material in lecture than did the Great Lakes students. On the other hand, Great Lakes students obtained a greater percentage of their knowledge from reading (alternative B) than did San Diego students.

TABLE 5 MEAN PERCENTAGE RESPONSES TO ALTERNATIVES BY ITEM BY SUBTEST OF SURVEY QUESTIONS (I LEARNED THIS MATERIAL:)

	FORM A STUDENTS IN SCHOOL					FORM B RECENT GRADUATES			
	A IN-CORPS SCHOOL LECTURE	B IN-CORPS SCHOOL READINGS	C IN-CORPS SCHOOL PRACTICAL EXPERIENCE	D FILMS OR OTHER VISUAL AIDS	E OUTSIDE CORPS SCHOOL	A IN-CORPS SCHOOL	B FORMAL TRAINING AT THIS HOSPITAL	C PRACTICAL EXPERIENCE AT THIS HOSPITAL	D BEFORE I BECAME A CORPSMAN
ANATOMY AND PHYSIOLOGY	60	20	1	3	15	78	2	3	16
FIRST AID	68	15	2	5	9	84	2	3	12
PREVENTIVE MEDICINE	59	22	1	6	12	87	1	3	12
NBC WARFARE	66	[illegible]	1	6	7	89	1	2	8
MATERIA MEDICA & TOXICOLOGY	73	15	2	1	9	86	2	5	8
PATIENT CARE	72	15	5	2	6	84	2	8	5

TABLE 6 MEAN PERCENTAGE RESPONSES TO ALTERNATIVES OF SURVEY QUESTIONS BY SCHOOL, BY FORM, AND BY SUBTEST (I LEARNED THIS MATERIAL:)

	A IN-CORPS SCHOOL LECTURE	B IN-CORPS SCHOOL READINGS	C IN-CORPS SCHOOL PRACTICAL EXPERIENCE	D FILMS OR OTHER VISUAL AIDS	E OUTSIDE CORPS SCHOOL	A IN-CORPS SCHOOL	B FORMAL TRAINING AT THIS HOSPITAL	C PRACTICAL EXPERIENCE AT THIS HOSPITAL	D BEFORE I BECAME A CORPSMAN
SAN DIEGO									
ANATOMY AND PHYSIOLOGY	70	15	0	1	14	81	2	3	14
FIRST AID	76	12	1	2	9	87	2	2	8
PREVENTIVE MEDICINE	67	16	0	4	13	90	1	3	6
NBC WARFARE	80	10	1	3	5	92	1	2	5
MATERIA MEDICA & TOXICOLOGY	74	12	2	2	10	88	2	4	6
PATIENT CARE	77	9	5	1	7	81	3	12	3
GREAT LAKES									
ANATOMY AND PHYSIOLOGY	53	25	5	1	17	77	2	3	18
FIRST AID	61	18	4	8	9	82	2	3	13
PREVENTIVE MEDICINE	53	27	2	7	11	86	1	3	10
NBC WARFARE	55	28	1	10	8	87	1	2	10
MATERIA MEDICA & TOXICOLOGY	73	17	2	1	7	85	2	5	8
PATIENT CARE	67	19	5	2	6	65	2	8	5

TABLE 7 MEAN PERCENTAGE RESPONSE TO ALTERNATIVES OF SURVEY QUESTIONS BY HIGH VS LOW RETENTION TEST SCORES BY DUTY STATIONS (I LEARNED THIS MATERIAL)

	A IN-CORPS SCHOOL	B FORMAL TRAINING IN THIS HOSPITAL	C PRACTICAL EXPERIENCE IN THIS HOSPITAL	D BEFORE I BECAME A CORPSMAN
HIGH RETENTION TEST SCORES				
PATUXENT RIVER	85	[illegible]	6	8
JACKSONVILLE	82	[illegible]	[illegible]	[illegible]
LOW RETENTION TEST SCORES				
29 PALMS	90	[illegible]	[illegible]	[illegible]
CHINA LAKE	83	6	[illegible]	4

The data for recent graduates (Form B) from San Diego indicated they learned a greater percentage of material in Corps school (alternative A) than did Great Lakes graduates. This tendency was consistent for all course areas except Patient Care.

Survey responses from Corpsmen at the two duty stations with the highest mean scores on the retention test were compared with those from the two duty stations having the lowest mean performance. With respect to the influence of on-the-job-training, no consistent differences were obtained as shown in Table 7.

D. TASK SCALE

The raw data from the Task Scale were coded by use of a five point scale ranging from the value of "1" for the "very incapable" judgments to "5" for the "very capable" judgments. These values were punched onto IBM cards for both the "is now" and "is hoped for" judgments. The data were analyzed by the computer which listed the number of respondents, the means, the standard deviations, and the sum of squares for each item. The analyses also produced this same information for the twenty-one functionally related task clusters. Three separate comparisons of the data were calculated: (1) nurse versus physicians versus Senior Corpsmen, (2) people who work closely with Junior Corpsmen, and (3) people at Naval hospitals versus people at station hospitals versus instructors at Corps schools.

The means of each of the twenty-one functionally related task clusters are presented in Table 8. This table combines nurse, physician, and Senior Corpsmen responses.

Appendix 6 shows a summary of the task scale data. It includes the functional task areas and names of the individual tasks rated, along with their respective mean judged importance, mean "is now" and "is hoped for" judgments, and the difference between the mean "is now" and "is hoped for" judgment. The Task Scale which had been modified to rate the importance of the tasks was analyzed by a hand count of the responses from the group tested at Quantico. These scores are listed in the mean judged importance column. One hundred and two of the tasks were rated as having a mean importance of above "4" or "very important."

TABLE 8. "MEANS AND MEANS OF TASK CLUSTERS FOR NURSES, PHYSICIANS, AND SENIOR CORPSMEN COMBINED."

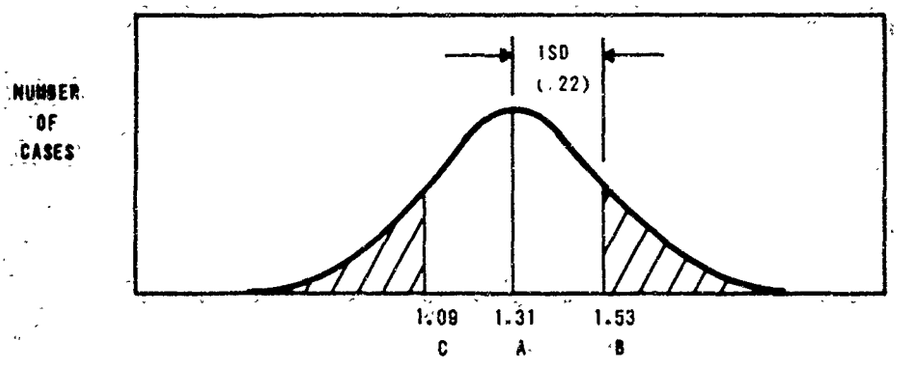
	("IS NOW")	("IS HOPED FOR")
1. CORPSMEN BEHAVIOR	3.06	4.42
2. ADMINISTRATIVE KNOWLEDGE	3 35	4.59
3. PATIENT ENVIRONMENT	3.93	4.77
4. PROVIDING FOR PATIENT COMFORT	3.53	4.66
5. OBSERVE, REPT , & REC PTS. COND & SYMPTOMS	3.39	4.61
6. MAINTAINING RECORDS & REPORTS	3.31	4.65
7. DIETS AND SERVING PROCEDURES	3.47	4.60
8. PHYSICAL EXAMINATION	3.33	4.62
9. COLLECTING SPECIMENS	3.21	4.59
10. ADMINISTRATION OF MEDICINE	3.10	4.49
11. OXYGEN THERAPY	3.07	4.48
12. PARENTERAL FLUIDS	3.06	4.47
13. GIVES IRRIGATIONS	2.90	4.30
14. APPLICATION OF HEAT AND COLD	3.52	4.61
15. ASEPTIC TECHNIQUES	2 95	4.36
16 ISOLATION	3 11	4 55
17. DRESSINGS AND BANDAGING	3 26	4.56
18. PROCEDURES REL. TO GI TRACT	3.03	4 40
19. PROCEDURES REL. TO GU TRACT	2 77	4.38
20. USES AND CARES FOR MECH DEVICES	3 06	4 40
21. NURSING PROCEDURES AND ROUTINES	2.84	4 32

On the first comparison, the means of the functional task clusters were tabulated, Appendix 7, for the nurses, physicians, and Senior Corpsmen. The "is hoped for" figures indicate that there was little difference in the judgments of expected performance as perceived by the physicians and nurses. The Senior Corpsmen, on the other hand, seemed to have higher expectations of the potential performance of the Junior Corpsmen in every area. The "is now" judgments, however, seemed to have considerably greater spread in the means of the judgments among the three groups. There was an appreciable amount of overlap in the judgment of the Senior Corpsmen and of the physicians, but the registered nurses' judgements were consistently lower.

Appendix 8 lists the functional task cluster mean scores for both those persons who reported working very closely and not very closely with Junior Corpsmen. From the "is now" column it can readily be seen that there was very little difference in the description of the Corpsmen's performance between those persons who worked closely with the Junior Corpsmen and those who did not. There was a tendency for those persons who did not work closely with the Junior Corpsmen to make positive judgments, but the differences were very slight. On the "is hoped for" portion of the table it can readily be seen that in most areas, those persons who work the least with Junior Corpsmen seem to have the greatest expectation for their ultimate performance.

In Appendix 9 the judgments of the personnel at Naval hospitals, personnel at station hospitals, and the personnel at each school facility are compared. The findings of this comparison indicate that those persons at school facilities tend to see the corpsmen as performing somewhat better in the areas of "Corpsmen Behavior," "Administrative Knowledge," "Patient Environment," "Providing for Patient Comfort," "Physical Examinations," "Collecting Specimens," "Administration of Medications," "Oxygen Therapy," and "Parenteral Fluids" than do the other two groups. There is little observable difference between the judgment of the three groups in the remaining areas. On the "is hoped for" section of the table, it is apparent that the people at both the Naval and station hospitals tend to see the Corpsmen as having a higher potential than do the faculty of the Corps schools. There seems to be little difference in the judgments of the staff of the Naval hospitals and the station hospitals in any of the functional task clusters.

"High discrepancy" was defined as the mean of the mean discrepancies plus one standard deviation of the discrepancies, while "low discrepancy" was defined as the mean of the discrepancies minus one standard deviation of the discrepancies. The mean of the mean discrepancies was 1.31 (in other words, the average difference between the "is now" and "is hoped for" judgments was 1.31), and the standard deviation of the mean discrepancies was .22 (68 percent of the mean discrepancies were between 1.09 and 1.54). A "high discrepancy" task had a difference between the "is now" and "is hoped for" judgments which was greater than the difference between these two judgments in 84 percent of the items (exceeded 1.53). A "low discrepancy" task had a difference between the "is now" and "is hoped for" which was less than 84 percent of the other tasks (less than 1.09).



A = MEAN OF DISTRIBUTION OF MEANS OF TASK DISCREPANCIES.

B = "A" PLUS ONE STANDARD DEVIATION OF THE DISTRIBUTION OF THOSE MEANS. ALL INDIVIDUAL TASK SCALE ITEM MEANS WHICH FALL WITHIN THE SHADED AREA TO THE RIGHT ARE CONSIDERED "HIGH" DISCREPANCY SCORES.

C = "A" MINUS ONE STANDARD DEVIATION OF THE DISTRIBUTION OF THOSE MEANS. ALL INDIVIDUAL TASK SCALE ITEM MEANS WHICH FALL WITHIN THE SHADED AREA TO THE LEFT ARE CONSIDERED "LOW" DISCREPANCY SCORES.

FIG. 4 DISTRIBUTION OF MEAN DISCREPANCIES FOR EACH TASK

E. QUESTIONNAIRE

The questionnaire results are discussed in the following order. (a) Junior Corpsmen, (b) Rated Corpsmen, and (c) Physicians and Nurses.

1. Junior Corpsmen

The questionnaire was administered to 236 Corpsmen. The results showed that 19.9 percent were HA's, 79.2 percent HN's, and 0.8 percent HM3's. The HM3's were Junior Corpsmen who had been rated as reserves. The sample revealed 93.2 percent were males and 6.8 percent were females. Fifteen percent had become Corpsmen through a striker program. Approximately 68 percent of the Corpsmen who entered through the striker program did so no later than eight months following enlistment. Further analysis indicated that 42 percent of the strikers entered the program while on board ship, 27 percent from a dispensary, and the remaining 30 percent, who in most cases were reserves, were classified as other; 4.7 percent of the Junior Corpsmen indicated that they were studying for a specialty rating and the remainder indicated that they were not. The distribution of specialty ratings being studied revealed no particular clustering.

The vast majority, 73.4 percent of those responding, had hospital experience; 4.5 percent of the Corpsmen had experience on ships, 11.6 percent had experience in Fleet Marine Forces, and 25.4 percent had dispensary experience.

Of 82 Corpsmen responding to a preference question, 68.3 percent preferred hospital duty. There was no significant loading on the other categories of duty stations with respect to preference.

The remaining questions on the Junior Corpsmen questionnaire concerned themselves with various opinions held by the sample. The questions and response percentages are listed below.

a. How would you compare the instruction received from nurses with that received from Corpsmen instructors?

Nurses superior to Corpsmen - 28.2 percent
No difference - 32.6 percent
Corpsmen superior to nurses - 39.2 percent

A Kolmogorov-Smirnov one-sample test revealed that this difference in favor of Corpsmen instruction was a significant one ($P < .05$)

b. What do you consider to be the greatest weakness of the Corpsmen's training?

Corps school too short - 27.0 percent
Time on OJT too short - 22.8 percent
Insufficient variety of OJT - 24.8 percent
No systematic course of instruction during OJT - 21.6 percent
Other (Specify) - 3.8 percent

The responses did not lend themselves to an ordering so that the test employed on the previous question to analyze the difference between various categories was inappropriate. In the present case, inspection of the data did not reveal any particular loadings for any of the four categories including "other" and a statistical analysis was not performed. Basically, the Corpsmen fairly evenly divided their responses among the four categories. This could very well indicate that they gave equal rating to each of the four items.

c. Which of the following most clearly describes how you became a Corpsmen?

Volunteered prior to enlistment - 42.4 percent
First choice at Boot Camp - 22.8 percent
Second or third choice at Boot Camp - 22.8 percent
I do not consider myself as having volunteered - 12.0 percent

The distribution of volunteers versus not being a volunteer is revealing. The Kolmogorov-Smirnov tests in this case exceeded the significance at the .05 level.

d. How would you describe your relationship with the doctors with whom you work?

Extremely satisfactory - 63.7 percent
Neither satisfactory nor dissatisfactory - 34.6 percent
Extremely dissatisfactory - 1.7 percent

This distribution is significantly different from the theoretical at the .05 level.

e. How would you describe your relationship with the nurses with whom you work?

Extremely satisfactory - 59.5 percent
Neither satisfactory nor dissatisfactory - 36.2 percent
Extremely dissatisfactory - 4.3 percent

As was the case for the physicians' relationships, this is significantly different from the theoretical distribution ($P < .05$).

f. How would you describe your relationship with the Senior Corpsmen with whom you work?

Extremely satisfactory - 73.9 percent
Neither satisfactory nor dissatisfactory - 23.0 percent
Extremely dissatisfactory - 3.1 percent

This distribution is significantly different from the theoretical and indicates that the vast majority of the Corpsmen do feel that their relationships with their superiors, in this case the Senior Corpsman, are extremely satisfactory."

2. Rated Corpsmen

The distribution of Senior Corpsmen was as follows: 313 Corpsmen between the rates of HM3 and HMCM filled out questionnaires. The average length of time since graduation from Corps School was 6.57 years with a standard deviation of 6.53. This distribution was bi-modal with essentially two groups of rated corpsmen: a relatively young group and a relatively old group. 44.4 percent of the sample were San Diego graduates, 46.6 percent were Great Lakes graduates, and 8.9 percent had been graduated from other Corps Schools. The striker program was utilized by 17.6 percent of those entering the corps school leaving 82.4 percent who did not use it. Examination of those who had entered through a striker program revealed that 5.5 percent entered from a hospital, 10.9 percent entered at a dispensary, 47.3 percent entered from aboard ship, and 41.8 percent indicate "other" of which the majority were reservists.

a. How would you compare the instruction received from nurses with that received from Corpsmen instructors?

Nurses superior to Corpsmen - 17.0 percent
No difference - 31.5 percent
Corpsmen superior to nurses - 31.5 percent

A non-parametric analysis was performed on this distribution and this difference in responses was significant beyond the .01 level.

b. What do you consider to be the greatest weakness of the Corpsman's training?

Corps school too short - 30.8 percent
Time on OJT too short - 16.7 percent
Insufficient variety of OJT - 24.8 percent
No systematic course of instruction during OJT - 12.4 percent
Other (Specify) - 15.3 percent

The "other" distribution was post-coded and approximately half, 44.4 percent, responded, "not enough practical experience." The remainder of the responses were highly varied, and the next significant grouping was 19.4 percent responding, "lack of organization."

c. Which of the following most clearly describes how you became a Corpsman?

Volunteered prior to enlistment - 47.8 percent
First choice at Boot Camp - 24.2 percent
Second or third choice at Boot Camp - 15.0 percent
I do not consider myself as having volunteered - 13.0 percent

This distribution was subjected to a Kolmogorov-Smirnov one-sample test and was found to be significantly different from a theoretical rectangular distribution beyond the .01 level. The Senior Corpsmen distribution and the Junior Corpsmen distribution were nearly identical in responses to this question.

d. How would you describe your relationship with the doctors with whom you work?

Extremely satisfactory - 85.9 percent
Neither satisfactory nor dissatisfactory - 13.8 percent
Extremely dissatisfactory - 0.3 percent

This distribution was tested for significance and was found to be different from a theoretical rectangular distribution beyond the .01 level.

e. How would you describe your relationship with the nurses with whom you work?

Extremely satisfactory - 49.8 percent
Neither satisfactory nor dissatisfactory - 41.4 percent
Extremely dissatisfactory - 8.8 percent

This distribution was significant beyond the .01 level.

f. How would you describe your relationship with the Senior Corpsmen with whom you work?

Extremely satisfactory - 74.6 percent
Neither satisfactory nor dissatisfactory - 23.2 percent
Extremely dissatisfactory - 2.2 percent

This distribution was significantly different from the theoretical beyond the .01 level.

3. Physicians and Nurses

The questionnaire was administered to 52 physicians whose mean length of service was 63.13 months, standard deviation 54.53, and 128 nurses whose mean legnth of service was 115.83 months, standard deviation 91.72.

Physicians:

Rank:

No Rank Given - 1
Lt - 19
LCDR - 20
CDR - 11
Capt - 1

"Hospital service in which most time spent"

	Number of Respondents
Medical	16
Surgical	11
Pediatrics	4
Orthopedics	5
Neuropsychiatrics	2
OB - Gyn	1
Out-patient	5
X-Ray or Lab	2
Anesthesia	1
Other	4

39 percent had served tours on ships.
29 percent had served tours at overseas shore facilities.

Nurses:

Rank:

Ens - 10
LTJG - 31
Lt - 17
LCDR - 58
CDR - 11

"Hospital service in which most time spent"

	Number of Respondents
Medical	33
Surgical	28
Pediatrics	3
Orthopedics	10
Neuropsychiatrics	3
OB - Gyn	8
Administration or Education	4
Dietetics	2
Anesthesia	3
OR	5
Nursery	1
Dependents	2
Out-Patients	1
Intensive Care	6
Contagion	1
Eye, ear, nose and throat	3
Other	6

It was found that the total length of experience for the Nurse Corps was more than it was for the physicians. This was not an unexpected finding as many of the physicians were not career officers whereas many of the nurses were.

a. This question read, "With which of the following categories do you have direct contact?"

	Nurses	Physicians
Mostly with Senior Corpsmen	3.1 percent	11.5 percent
Mostly with Junior Corpsmen	10.2 percent	19.2 percent
With both Senior and Junior Corpsmen	69.5 percent	67.3 percent
Very little contact with Corpsmen	7.0 percent	0.0 percent
Other	10.2 percent	1.9 percent

b. How well equipped are the Corpsmen fresh from school to do the tasks expected of them?

	Nurses	Physicians
Very well equipped	1.6 percent	0.0 percent
Fairly well equipped	49.0 percent	45.0 percent
Not well equipped	37.0 percent	45.0 percent
Poorly equipped	5.0 percent	7.8 percent
Other (Specify)	7.4 percent	2.2 percent

There were definite differences between the two response groups, nurses versus physicians. A Kolmogorov-Smirnov two-sample test was applied to these data and significance exceeded the .05 level. Inspection of the "other" responses revealed no useful information so it will not be presented here. Nurses are somewhat more favorably impressed than physicians with the training that the Corpsman receives and how it prepares him to actually function at the duty station.

c. Is the average corpsman fresh from school well enough prepared to benefit from the training provided at this duty station?

	Nurses	Physicians
Yes	86.2 percent	86.0 percent
No	13.8 percent	14.0 percent

The responses indicated extremely close agreement in favor of the Corpsman being prepared to benefit from the training being provided at the duty station. Nevertheless, a significant proportion of both groups felt that they were not significantly prepared to benefit from the training provided at that duty station.

d. This was an open-ended question which was post-coded. The question read, "Are there any areas in which you would like to see the Corpsmen more thoroughly trained?" Post-coding of the nurse and physician responses developed several categories, only three of which received significant loadings. The first category, "more practical experience and more nursing arts" received 35 percent of the nurses' responses and 22.5 percent of the physicians' responses. The second category read, "administration of medication and basic arithmatic" and received 23 percent of the nurses' responses and

only 6 percent of the physicians' responses. The next category to receive any significant responses was, "emergency procedures." This received only 4 percent of the nurses' responses, but received 35.48 percent of the physicians' responses. In general, the distribution of responses between the two groups was very similar with the exception of the category of "emergency procedures." Physicians felt that this was much more important than did the nurses. Referring back to the way the question was worded, it appeared that physicians felt more emphasis should be placed on training for emergency procedures for the Corpsmen than did the nurses. In other respects there was considerable agreement between the two professional groups.

e. How would you evaluate the morale or "esprit de corps" of the newly graduated Corpsmen at your present station?

	Nurses	Physicians
Very high	4.3 percent	3.5 percent
High	35.0 percent	58.9 percent
Neither high nor low	56.0 percent	33.0 percent
Low	3.1 percent	3.4 percent
Very low	1.6 percent	1.2 percent

A Kolmogorov-Smirnov two-sample test was performed on these data and the distributions were significantly different from one another. Inspection indicated that the distribution of nurses was skewed in a more negative morale direction than the distribution of the physicians. Almost a complete inversion between these two categories of responses was obtained by the measure of physicians.

f. This was an open-ended question asking for two pieces of information. First, "What is the most advantageous use to which you can put a newly graduated Corpsman?" In general, there did not appear to be any meaningful difference between the responses of the nurses and the physicians with respect to the Junior Corpsman. The greatest loading on this question, 47.8 percent for nurses and 32.9 percent for physicians, was "direct patient care." The next significant loading was, in the case of both nurses and physicians, "patient care under supervision." In other words, it was felt that Corpsmen could be best used for purposes of patient care, either independently or with supervision.

The second part of the question simply read, "Senior Corpsmen." Post-coding revealed that 33 percent of the nurses and 40 percent of the physicians responded to the category, "assist with supervision of Junior Corpsman." This category had the heaviest loading of any of the ten categories which were developed. The next most prevalent category was, "administration of the ward." In this category, 31.7 percent of the nurses and 25 percent of the physicians were categorized as having responded.

g. Which of the following most accurately characterizes the discipline problems that you have had with male Corpsman?

	Nurses	Physicians
No disciplinary problems at all	6.2 percent	9.6 percent
Only infrequent disciplinary problems	84.1 percent	82.3 percent
Frequent disciplinary problems	6.5 percent	5.0 percent
Very frequent disciplinary problems	.8 percent	.2 percent
Other (Specify)	2.4 percent	2.9 percent

A Kolmogorov-Smirnov test applied to these distributions did not achieve significance. The nurses and physicians held nearly identical opinions with respect to the discipline problem.

h. Which of the following most accurately characterizes the discipline problems that you have had with Corps WAVES?

	Nurses	Physicians
No disciplinary problems at all	1.8 percent	16.4 percent
Only infrequent disciplinary problems	67.5 percent	82.2 percent
Frequent disciplinary problems	20.4 percent	1.4 percent
Very frequent disciplinary problems	6.5 percent	0.0 percent
Other (Specify)	3.8 percent	0.0 percent

A test of significance was not possible because of insufficient sample size, but the two distributions did appear to differ.

i. How would you compare the quality of newly graduated Corpsmen with those of one year ago?

	Nurses	Physicians
Superior	13.7 percent	6.3 percent
No different	54.8 percent	57.4 percent
Inferior	19.6 percent	25.7 percent
I have been in the service less than one year.	11.9 percent	10.6 percent

There was no difference between the physician and nurse response distributions.

j. How would you compare the quality of newly graduated Corpsmen with those of two years ago?

	Nurses	Physicians
Superior	14.3 percent	12.7 percent
No different	33.9 percent	29.9 percent
Inferior	21.4 percent	23.4 percent
I have been in the service less than 2 years	30.4 percent	34.0 percent

No significant difference between distributions was observed.

k. Is the newly graduated Corpsmen sufficiently familiar with medical terminology to adequately assist you with your hospital duties?

	Nurses	Physicians
Yes	50.0 percent	57.1 percent
No	50.0 percent	42.9 percent

No significant difference between responses of nurses and physicians. The standard error of the proportion is 6.5. There was a tendency for the nurses to be slightly less favorable toward the Corpsman's familiarity with medical terminology than the physicians.

l. Has the newly graduated Corpsman sufficient [illegible] medical procedures to be of valuable assistance to you in your rounds?

	Nurses	Physicians
Yes	52.6 percent	45.9 percent
No	47.4 percent	54.1 percent

No difference in responses existed between the two professional groups. Standard error of the proportion was 6.3.

m. How dependable are male Corpsmen with regard to carrying out written or oral orders?

	Nurses	Physicians
Very dependable	22.6 percent	43.5 percent
Somewhat dependable	73.0 percent	52.8 percent
Undependable	4.4 percent	3.7 percent

There was a significant difference between the two professional groups' responses to this question. The physicians felt that Corpsmen were "very dependable" almost twice as much as did the nurses. It is important to note that neither group gave significant loading to the category of "undependable."

n. How dependable are Corps WAVES with regard to carrying out written or oral orders?

	Nurses	Physicians
Very dependable	24.7 percent	48.5 percent
Somewhat dependable	75.3 percent	48.7 percent
Undependable	0.0 percent	2.8 percent

The same distribution for both professional groups was obtained as in the previous question and a difference was observed in the same direction.

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V. SUMMARY AND CONCLUSIONS

This is the first phase of a larger research effort. Two major areas were investigated: (1) the nature of the present curricula at the two Corps schools and (2) the nature of the job requirements expected of newly graduated Corpsmen at their first duty station. The development and construction of four instruments and the analysis and description of the present curriculum was accomplished. These instruments and the evaluation were tailor-made to give the appropriate Naval decision-makers the necessary input to begin formation of an experimental curriculum and to continue with future research phases.

A. CURRICULUM ANALYSIS

The curricula of the two Class A Schools, at Great Lakes, Illinois, and San Diego, California, were analyzed and described. The result section of this report summarized major discrepancies, and a complete copy of the total analysis and description is available upon request at the Education and Training Dept. of NMRI, Bethesda, Md. Discrepancies between the two presumably similar cirricula were noted. It appeared that these discrepancies reflected special emphasis by the staff of that particular school with respect to a certain topic. For example, the First Aid section at San Diego seemed to have a greater emphasis on procedures specifically germane to FMF Corpsmen whose operations are based in Vietnam.

B. RETENTION EXAMINATION

This instrument was designed to be a "comprehensive" test of knowledge covering material learned in the Basic Hospital Corps Schools. The initial item pool was viewed by personnel of NMRI Bu Med and HRB-Singer. The 250 items selected by this panel were pretested. Based on the pretest data, 125 questions were selected for use in the final version of the instrument. The results of the 125 item retention examination indicated:

- No significant differences were found between schools on total test performance.

● The performance of graduates of the two schools was significantly different on four of the six parts of the tests. San Diego students were superior on Anatomy and Physiology, First Aid, and NBC Warfare, while the Great Lakes students scored higher on the Patient Care Section.

● Test performance declined significantly over time since school graduation. Compared to students in school, the 0-8 and 9-24 week post-graduates showed about a 10 percent decline while the 24 week and above group declined approximately 16 percent.

● When the subject populations at various duty stations were separated by school attended, differential rates or retention were found for subject areas over time.

● Part test performance appeared to relate positively to the number of hours spent on the subject in school.

C. SURVEY

This instrument was an integral part of the retention examination. A survey item, designed to determine where the Corpsman had learned the item of information, followed each retention item. Two forms of the survey were made, one for students in the Corps schools, with responses for material learned in: lecture, reading, practical experience, films or other visual aids, and outside or previous to Corps school. The second form, administered with the retention test only to Corps school graduates, had responses for material learned in: Corps school, formal training at the assigned hospital, practical experience in the hospital and before becoming a Corpsman. The following results are indices of respondent recollections of where specific retention test material was learned.

● Approximately the same amount of knowledge (about 10 percent) tapped by the retention examination was gained prior to Corps school attendance, irrespective of survey form and school attendance.

● San Diego students appeared to learn more from lecturers than did Great Lakes students as indicated by a response difference for item A on Form A of 14 percent. In general this item appears to be supportive of retention test results.

● Great Lakes students, however, indicated a 10 percent higher response to learning material through Corps school readings than did San Diego students.

● San Diego graduates indicated a 3 percent higher response for learning tested material while in school than did Great Lakes graduates.

● About the same percentage of graduates from both schools indicated they learned the tested material in formal hospital training and practical experience at the hospital.

D. TASK SCALE AND QUESTIONNAIRE

The task scale was administered to physicians, nurses and Senior Hospital Corpsmen. The questionnaires were administered to the same groups plus the Junior Corpsmen who took the retention-survey instrument. The task scale was uniform for all groups while the questionnaire was tailored to each specific group. The task scale was composed of a list of the tasks that comprise the job which the Junior Corpsmen performs at his first duty station. The raters were asked to give two responses for each item, one in terms of present level of Corpsman capability, the second in terms of a realistic future level of Corpsman capability if more optimal training were to be provided in the Class A School. The questionnaires required responses primarily of an attitudinal and demographic nature. The results for the instruments indicated:

● For the "is hoped for" or future capability of Junior Corpsmen, few differences existed between judgments of doctors and nurses. However, Senior Corpsmen had higher expectations.

● For the "is now" or present capability, there was less agreement between groups. While Senior Corpsmen and doctors perceived Junior Corpsmen performance in a similar fashion, the nurses tended to rate their present capability lower than the other two groups

● There was little difference between judgments of persons who did and did not work closely with Junior Corpsmen.

*There was little difference between the performance judgments by the raters at station hospitals and Naval hospitals. Raters from the Corpsmen schools indicated performance was better than did the Naval and station hospital raters.

*The task scale clusters which showed the greatest discrepancy between "is now" performance and "hoped for" ratings were: isolation, dressing and bandaging, procedures relating to GI tract, nursing procedures and routines. Those with the least discrepancy were patient environment, providing for patient comfort, diets and serving procedure, and application of heat and cold.

E. GENERAL

There is general agreement in the curricula of the two schools; however, a number of important discrepancies exist. These discrepancies appear to be the result of differing emphasis on the part of the school staffs and in most cases are important considerations.

On individual subtest parts, significant differences, most of which favored San Diego, existed (the total test difference between schools was not significant). Further results indicated a significant decline in retention over time. This would indicate a discrepancy between what is taught in school and what is directly reinforced by job demands.

The task scale provided an index of performance adequacy A high discrepancy between the "is now" and "is hoped for" indicated that the Corpsmen were not perceived as being adequately prepared for the job role demanded by the first duty station. A low discrepancy task item, on the other hand, indicated that the Corpsman training was judged to be adequate to meet the expectations of the job. There was a number of high discrepancy items, most of which, when checked against the cirricula description and analysis were found to have been covered in school, implying that they needed greater emphasis in a revised curriculum.

Overall, the indices employed in this study pointed rather uniformly to a need for curriculum revision and standardization. In no case were glaring deficiencies discovered but the large number of high discrepancy items in the task scale, the marked retention decrement and the comments by doctors, nurses and Senior Corpsmen all point to the need for specific inprovements in the curriculum.

The detailed data of the task scale used with the subtest performance scores of the retention test, the survey data, and the curriculum analysis, provides a sound empirical basis for the structuring of specific behavioral objectives which will retain what is now satisfactory, strengthen what is weak and insure the correction of current deficiencies.

APPENDIX 1

RETENTION TEST AND SURVEY QUESTION INSTRUCTIONS FOR FINAL TEST FORMS A AND B

This examination contains two types of questions:

*The odd-numbered questions (1, 3, 5, 7...) are similar to those found in your classroom examination.

*The even-numbered questions (2, 4, 6, 8...) each refer to the preceding odd-numbered questions.

You will find that all of the even-numbered questions are the same and simply ask where you learned the material you used in answering the preceding odd-numbered question.

There is no correct or incorrect answer to the even-numbered questions; however, you are expected to accurately determine the source of the information needed to answer the question.

If you were exposed to a particular bit of information from more than one source, then your answer should reflect the source which gave you the greatest understanding or knowledge of the answer.

If you do not know an answer, then guess. Guessing will not detract from your score. If you guess at an answer, but think you were exposed to the information in one of the sources listed, then fill in the answer following the question as though you had known the answer.

The answers are to be marked on the IBM Answer Sheet. You have had experience with this type of answer sheet, but for review purposes, fill in the example below.

Example of Form A Retention and Survey Item

1. The opposite of proximal is:

   a. Lateral
   b. Medial
   c. Anterior
   d. Distal

2. I learned this material:

   a. In Corps school lecture
   b. In Corps school readings
   c. In Corps school practical experience
   d. Films or other visual aids
   e. Outside Corps school

Example of Form B Retention and Survey Item

1. The opposite of proximal is:

   a. Lateral
   b. Medial
   c. Anterior
   d. Distal

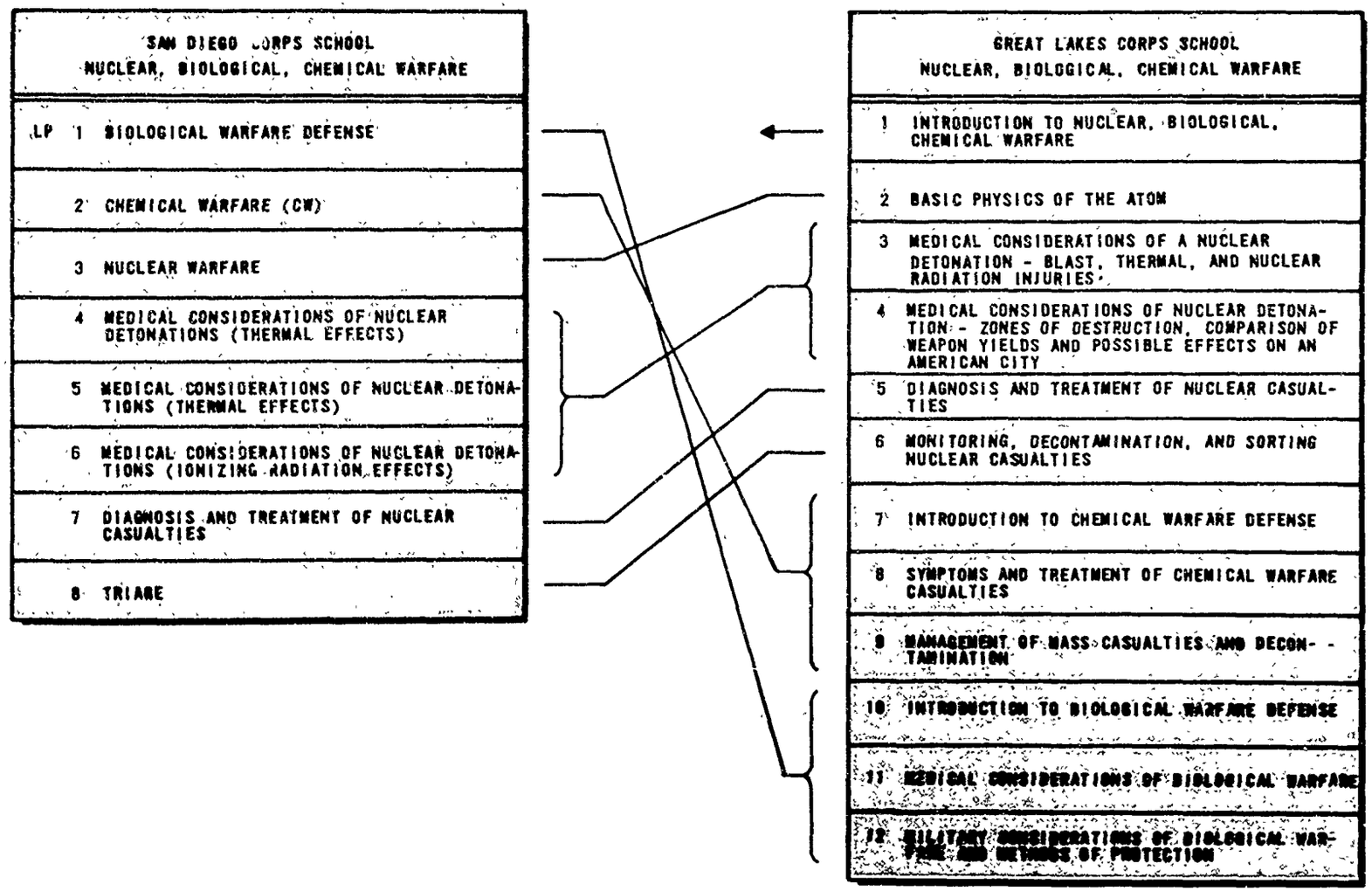
2. I learned this material:

   a. In Corps school
   b. Formal training at this hospital
   c. Practical experience at this hospital
   d. Before I became a Corpsman

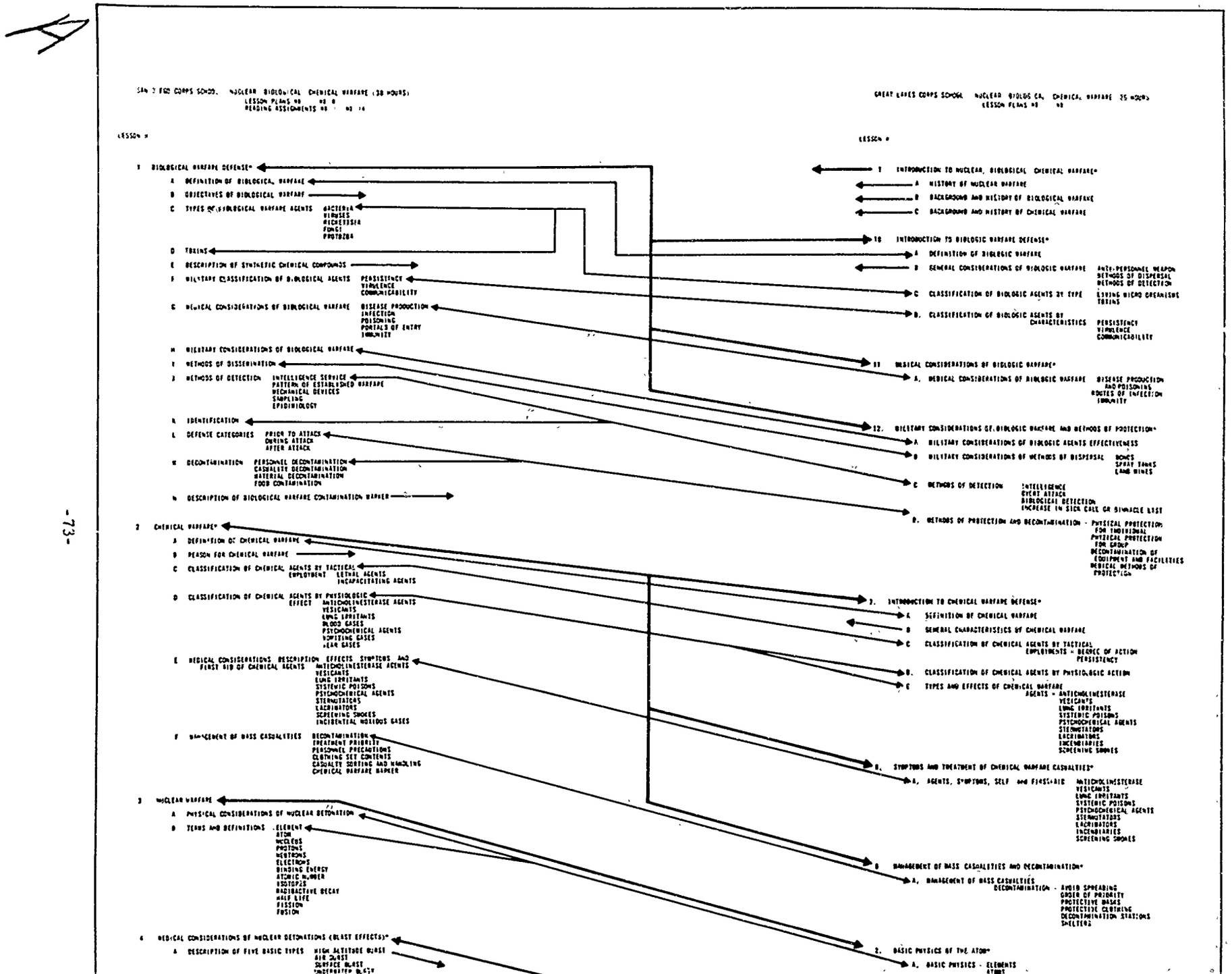
Note that final Forms A and B use the same retention items and differ only in the Survey tems format.

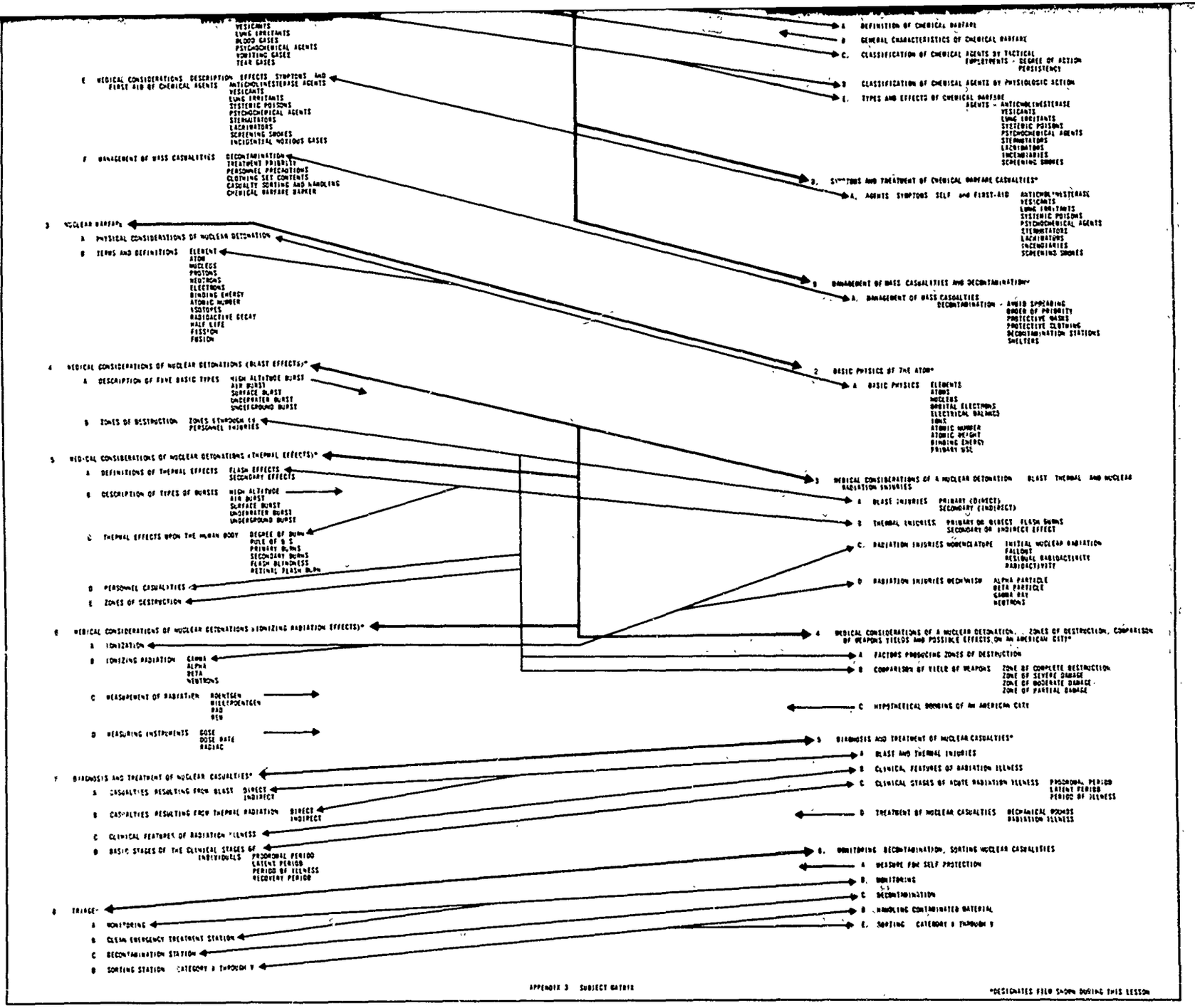
APPENDIX 2

APPENDIX 2 LESSON TITLE MATRIX



APPENDIX 3


SAN J FOR CORPS SCHOOL NUCLEAR BIOLOGICAL CHEMICAL WARFARE (38 HOURS)
LESSON PLANS NO 0
READING ASSIGNMENTS NO 1 NO 14
LESSON #
1 BIOLOGICAL WARFARE DEFENSE*
A DEFINITION OF BIOLOGICAL WARFARE
B OBJECTIVES OF BIOLOGICAL WARFARE
C TYPES OF BIOLOGICAL WARFARE AGENTS BACTERIA VIRUSES RICKETTSIA FUNGI PROTOZOA
D TOXINS
E DESCRIPTION OF SYNTHETIC CHEMICAL COMPOUNDS
F MILITARY CLASSIFICATION OF BIOLOGICAL AGENTS PERSISTENCY VIRULENCE COMMUNICABILITY
G MEDICAL CONSIDERATIONS OF BIOLOGICAL WARFARE DISEASE PRODUCTION INFECTION POISONING PORTALS OF ENTRY IMMUNITY
H MILITARY CONSIDERATIONS OF BIOLOGICAL WARFARE
I METHODS OF DISSEMINATION
J METHODS OF DETECTION INTELLIGENCE SERVICE PATTERN OF ESTABLISHED WARFARE MECHANICAL DEVICES SAMPLING EPIDIMIOLOGY
K IDENTIFICATION
L DEFENSE CATEGORIES PRIOR TO ATTACK DURING ATTACK AFTER ATTACK
M DECONTAMINATION PERSONNEL DECONTAMINATION CASUALTY DECONTAMINATION MATERIAL DECONTAMINATION FOOD CONTAMINATION
N DESCRIPTION OF BIOLOGICAL WARFARE CONTAMINATION BARRIER
2 CHEMICAL WARFARE*
A DEFINITION OF CHEMICAL WARFARE
B REASON FOR CHEMICAL WARFARE
C CLASSIFICATION OF CHEMICAL AGENTS BY TACTICAL EMPLOYMENT LETHAL AGENTS INCAPACITATING AGENTS
D CLASSIFICATION OF CHEMICAL AGENTS BY PHYSIOLOGIC EFFECT ANTICHOLINESTERASE AGENTS VESICANTS LUNG IRRITANTS BLOOD GASES PSYCHOCHEMICAL AGENTS VOMITING GASES TEAR GASES
E MEDICAL CONSIDERATIONS DESCRIPTION EFFECTS SYMPTOMS AND FIRST AID OF CHEMICAL AGENTS ANTICHOLINESTERASE AGENTS VESICANTS LUNG IRRITANTS SYSTEMIC POISONS PSYCHOCHEMICAL AGENTS STERNUTATORS LACRIMATORS SCREENING SMOKES INCIDENTEAL NOXIOUS GASES
F MANAGEMENT OF MASS CASUALTIES DECONTAMINATION TREATMENT PRIORITY PERSONNEL PRECAUTIONS CLOTHING SET CONTENTS CASUALTY SORTING AND HANDLING CHEMICAL WARFARE BARRIER
3 NUCLEAR WARFARE
A PHYSICAL CONSIDERATIONS OF NUCLEAR DETONATION
B TERMS AND DEFINITIONS ELEMENT ATOM NUCLEUS PROTONS NEUTRONS ELECTRONS BINDING ENERGY ATOMIC NUMBER ISOTOPES RADIOACTIVE DECAY HALF LIFE FISSION FUSION
4 MEDICAL CONSIDERATIONS OF NUCLEAR DETONATIONS (BLAST EFFECTS)*
A DESCRIPTION OF FIVE BASIC TYPES HIGH ALTITUDE BURST AIR BURST SURFACE BLAST UNDERWATER BLAST
GREAT LAKES CORPS SCHOOL NUCLEAR BIOLOGICAL CHEMICAL WARFARE 35 HOURS
LESSON PLANS NO NO
LESSON #
1 INTRODUCTION TO NUCLEAR, BIOLOGICAL CHEMICAL WARFARE*
A HISTORY OF NUCLEAR WARFARE
B BACKGROUND AND HISTORY OF BIOLOGICAL WARFARE
C BACKGROUND AND HISTORY OF CHEMICAL WARFARE
10 INTRODUCTION TO BIOLOGIC WARFARE DEFENSE*
A DEFINITION OF BIOLOGIC WARFARE
B GENERAL CONSIDERATIONS OF BIOLOGIC WARFARE ANTI-PERSONNEL WEAPON METHODS OF DISPERSAL METHODS OF DETECTION
C CLASSIFICATION OF BIOLOGIC AGENTS BY TYPE LIVING MICRO ORGANISMS TOXINS
D. CLASSIFICATION OF BIOLOGIC AGENTS BY CHARACTERISTICS PERSISTENCY VIRULENCE COMMUNICABILITY
11 MEDICAL CONSIDERATIONS OF BIOLOGIC WARFARE*
A. MEDICAL CONSIDERATIONS OF BIOLOGIC WARFARE DISEASE PRODUCTION AND POISONING ROUTES OF INFECTION IMMUNITY
12. MILITARY CONSIDERATIONS OF BIOLOGIC WARFARE AND METHODS OF PROTECTION*
A MILITARY CONSIDERATIONS OF BIOLOGIC AGENTS EFFECTIVENESS
B MILITARY CONSIDERATIONS OF METHODS OF DISPERSAL BOMBS SPRAY TANKS LAND MINES
C METHODS OF DETECTION INTELLIGENCE OVERT ATTACK BIOLOGICAL DETECTION INCREASE IN SICK CALL OR SICKNESS LAST
D. METHODS OF PROTECTION AND DECONTAMINATION - PHYSICAL PROTECTION FOR INDIVIDUAL PHYSICAL PROTECTION FOR GROUP DECONTAMINATION OF EQUIPMENT AND FACILITIES MEDICAL METHODS OF PROTECTION
2. INTRODUCTION TO CHEMICAL WARFARE DEFENSE*
A DEFINITION OF CHEMICAL WARFARE
B GENERAL CHARACTERISTICS OF CHEMICAL WARFARE
C CLASSIFICATION OF CHEMICAL AGENTS BY TACTICAL EMPLOYMENTS - DEGREE OF ACTION PERSISTENCY
D. CLASSIFICATION OF CHEMICAL AGENTS BY PHYSIOLOGIC ACTION
E TYPES AND EFFECTS OF CHEMICAL WARFARE AGENTS - ANTICHOLINESTERASE VESICANTS LUNG IRRITANTS SYSTEMIC POISONS PSYCHOCHEMICAL AGENTS STERNUTATORS LACRIMATORS INCENDIARIES SCREENING SMOKES
8. SYMPTOMS AND TREATMENT OF CHEMICAL WARFARE CASUALTIES*
A. AGENTS, SYMPTOMS, SELF and FIRST-AID ANTICHOLINESTERASE VESICANTS LUNG IRRITANTS SYSTEMIC POISONS PSYCHOCHEMICAL AGENTS STERNUTATORS LACRIMATORS INCENDIARIES SCREENING SMOKES
9 MANAGEMENT OF MASS CASUALTIES AND DECONTAMINATION*
A. MANAGEMENT OF MASS CASUALTIES DECONTAMINATION - AVOID SPREADING ORDER OF PRIORITY PROTECTIVE BASES PROTECTIVE CLOTHING DECONTAMINATION STATIONS SHELTERS
2. BASIC PHYSICS OF THE ATOM*
A. BASIC PHYSICS - ELEMENTS ATOMS



APPENDIX 3 SUBJECT MATRIX

*DESIGNATES FIELD SHOPS DURING THIS LESSON

APPENDIX 4

APPENDIX 4 PART AND TOTAL TEST ITEMS FOR THE SAMPLES FACILITIES

	A&P 16 ITEMS	FA 25 ITEMS	PM 10 ITEMS	NBC WARFARE 10 ITEMS	MM&T 21 ITEMS	PC 43 ITEMS	TOTAL
SAN DIEGO SCHOOL	11.12	19.42	6.53	5.49	13.36	29.86	85.78
GREAT LAKES SCHOOL	8.89	15.02	6.07	5.48	13.75	32.09	81.30
PATUXENT RIVER	9.22	15.88	5.78	3.89	11.22	32.22	78.21
JACKSONVILLE	9.11	16.50	6.25	4.32	11.75	29.32	77.25
PORTSMOUTH	8.50	15.31	5.40	4.38	10.86	29.58	74.03
KEY WEST	8.52	15.30	5.30	4.33	11.26	28.81	73.52
BAINBRIDGE	8.21	15.07	5.29	4.29	11.14	29.29	73.29
CHELSEA	7.96	14.79	5.29	3.92	11.08	28.80	71.84
NEW LONDON	8.80	15.60	5.67	4.13	9.87	27.73	71.80
SAN DIEGO HOSP.	9.06	16.65	5.19	4.26	10.81	25.81	71.78
ST. ALBANS	8.15	14.63	5.85	3.78	10.04	28.77	71.22
OAKLAND	9.15	15.58	4.69	4.62	10.88	25.73	70.65
GREAT LAKES HOSP.	5.45	12.64	5.64	3.45	9.55	29.36	66.09
29 PALMS	7.60	17.40	5.80	3.40	9.00	26.00	62.90
CHINA LAKE	5.57	14.00	4.14	3.43	10.00	21.43	58.57

APPENDIX 5

DUNCAN'S NEW MULTIPLE RANGE TEST (KRAMER'S EXTENSION)

APPLIED TO THE DIFFERENCES BETWEEN MEANS OF EXPERIENCE GROUPS

	1	2	3	4	SHORTEST SIGNIFICANT RANGES
MEANS	66.86	72.77	73.88	83.12	
1. 66.86		53.49	79.39	99.37	37.89
2. 72.77			12.05	60.86	39.95
3. 73.88				58.22	41.31
	1	2	3	4	

Any two treatment means not underscored by the same line are significantly different at the 0. 05 level.

Any two treatment means underscored by the same line are not significantly different at the 0. 05 level.

See Kramer, C. Y., Extension of Multiple Range Tests to Group Mean with Unequal Numbers of Replications., Biometrics, 1956, Vol. 12, pp. 307-310.

APPENDIX 6

APPENDIX 6 SUMMARY OF TASK SCALE DATA

FUNCTIONAL TASK AREA	INDIVIDUAL TASKS RATED	MEAN JUDGED IMPORTANCE	MEAN IS NOW JUDGMENT	MEAN IS HOPED FOR JUDGMENT	DIFFERENCE BETWEEN MEAN IS NOW AND IS HOPED FOR JUDGMENT
CORPSMAN BEHAVIOR	USES MEDICAL TERMINOLOGY	3.69	3.23	4.40	1.17
	USES MEDICAL ABBREVIATIONS	3.85	3.20	4.36	1.16
	USES MEDICAL SYMBOLS	3.55	3.13	4.36	1.23
	PLANS WORK EFFICIENTLY	3.67	2.93	4.53	1.60**
	ANTICIPATES PATIENTS' NEEDS	4.06	2.90	4.46	1.56**
	ADAPTS PROCEDURES TO PATIENTS NEEDS	4.00	2.96	4.40	1.44
	INSTILLS CONFIDENCE	4.52	3.03	4.43	1.40
	USES GOOD BODY MECHANICS	3.91	3.13	4.46	1.33
ADMINISTRATIVE KNOWLEDGE	CHAIN OF COMMAND	3.61	3.50	4.63	1.13
	FROM WHOM TO SEEK ASSISTANCE	4.15	3.56	4.70	1.14
	TO WHOM TO REPORT	3.79	3.60	4.63	1.03*
	ADMISSION OF PATIENT	3.79	3.16	4.56	1.40
	DISCHARGE OF PATIENT	3.76	3.16	4.53	1.37
	TRANSFER OF PATIENT	3.73	3.06	4.50	1.44
PATIENT ENVIRONMENT	CLEAN BEDSIDE UNITS	3.76	3.80	4.73	.93*
	CLEAN DECKS	3.61	3.96	4.80	.84
	DISPOSE OF WASTE	4.12	3.86	4.76	.90
	MAKE UNOCCUPIED BED	3.33	4.13	4.80	.67
PROVIDING FOR PATIENT COMFORT	BED BATH	3.94	3.76	4.73	.97*
	TUB BATH	3.61	3.76	4.70	.94*
	SHOWER BATH	3.52	3.80	4.70	.90*
	MAKE OCCUPIED BED	3.91	3.66	4.73	1.07*
	ROUTINE ORAL HYGIENE	3.91	3.70	4.70	1.00*
	SPECIAL ORAL HYGIENE	4.00	3.23	4.46	1.23

*LOW DISCREPANCY
**HIGH DISCREPANCY

APPENDIX 6 SUMMARY OF TASK SCALE DATA

FUNCTIONAL TASK AREA	INDIVIDUAL TASKS RATED	MEAN JUDGED IMPORTANCE	MEAN IS NOW JUDGMENT	MEAN IS HOPED FOR JUDGMENT	DIFFERENCE BETWEEN MEAN IS NOW AND IS HOPED FOR JUDGMENT
PROVIDING FOR PATIENT COMFORT	CARE OF HAIR	3.03	3.56	4.63	1.07*
	CARE OF NAILS	3.06	3.53	4.63	1.10
	SPECIAL FOOT CARE	3.76	3.16	4.53	1.37
	SHAVE PATIENT	3.15	3.66	4.66	1.00*
	MORNING CARE ROUTINE	3.64	3.70	4.73	1.03*
	EVENING CARE ROUTINE	3.52	3.66	4.73	1.07*
	TURNING & POSITIONING PATIENTS	4.09	3.30	4.63	1.33
	LIFTING AND MOVING PATIENTS	4.16	3.13	4.66	1.53
	GIVING & REMOVAL OF BEDPANS AND URINALS	3.39	3.60	4.70	1.10
	USE OF AIR RINGS, AIR MATTRESSES, ETC., FOR RELIEF OF PRESSURE	3.97	3.40	4.53	1.13
	USE OF FOOT BOARDS	3.64	3.20	4.56	1.36
OBSERVE, REPORT AND RECORD PATIENTS' CONDITION AND SYMPTOMS	TAKE TPR	4.24	3.80	4.86	1.06*
	TAKE B/P	4.15	3.90	4.80	.90*
	CONDITION: CRITICAL, GOOD, ETC. & STATUS	4.42	3.23	4.36	1.13
	CONDITION AND COLOR OF SKIN	4.39	3.10	4.46	1.36
	NOTE SPECIFIC SYMPTOMS	4.45	3.03	4.50	1.47
MAINTAINING RECORDS & REPORTS	NURSING NOTES	4.18	3.20	4.63	1.43
	GRAPHIC SHEET, TPR, B/P	4.18	3.43	4.70	1.27
	WARD DATA CARD	3.94	3.40	4.63	1.23
	NURSING CARE PLAN	4.15	3.23	4.53	1.30
	INTAKE AND OUTPUT CHART	4.27	3.13	4.70	1.57**
DIETS AND SERVING PROCEDURES	PREPARE WARD FOR MEALS	3.12	3.56	4.66	1.10
	SERVE TRAYS IN PROPER ORDER	2.97	3.63	4.66	1.03*
	FEED HELPLESS PATIENTS	4.00	3.50	4.53	1.03*

*LOW DISCREPANCY

**HIGH DISCREPANCY

APPENDIX 6 SUMMARY OF TASK SCALE DATA

FUNCTIONAL TASK AREA	INDIVIDUAL TASKS RATED	MEAN JUDGED IMPORTANCE	MEAN IS NOW JUDGMENT	MEAN IS HOPED FOR JUDGMENT	DIFFERENCE BETWEEN MEAN IS NOW AND IS HOPED FOR JUDGMENT
DIETS AND SERVING PROCEDURES	FEED INFANTS	4.06	3.10	4.43	1.33
	FEED CHILDREN	3.87	3.26	4.46	1.20
	PROPER DISPOSAL OF TRAYS	3.52	3.66	4.66	1.00*
PHYSICAL EXAMINATION	ASSEMBLE EQUIPMENT	3.74	3.13	4.63	1.50
	PREPARE PATIENT	3.64	3.30	4.66	1.36
	WEIGH AMBULATORY PATIENT	2.82	4.03	4.76	.73*
	WEIGH BED PATIENT	3.09	3.10	4.50	1.40
	WEIGH AND MEASURE INFANTS	3.67	3.10	4.46	1.36
	ASSIST PHYSICIAN	4.19	3.30	4.63	1.33
COLLECTING SPECIMENS	URINE	3.97	3.70	4.70	1.00*
	FECES	3.85	3.53	4.70	1.17
	SPUTUM	3.85	3.43	4.66	1.23
	CULTURES	4.09	3.10	4.63	1.53
	SMEARS	4.15	2.90	4.50	1.60
	DRAINAGE FROM WOUNDS	4.36	2.96	4.53	1.57**
	GASTRIC CONTENTS FOR LAB ANALYSIS	4.24	2.76	4.33	1.57**
	PROPER LABEL	4.52	3.36	4.70	1.34
	PROPER CONTAINER	4.24	3.36	4.70	1.34
	PREPARATION OF PATIENT FOR DIAGNOSTIC TESTS	4.30	3.00	4.46	1.46
	ORAL	4.57	3.73	4.73	1.00*
	HYPODERMIC	4.58	3.46	4.73	1.27
	INTRAMUSCULAR	4.66	3.43	4.66	1.23
	INTRAVENOUS	4.75	2.53	4.06	1.53
	SUPPOSITORIES	4.12	3.40	4.56	1.16

*LOW DISCREPANCY
**HIGH DISCREPANCY

APPENDIX 6 SUMMARY OF TASK SCALE DATA

FUNCTIONAL TASK AREA	INDIVIDUAL TASKS RATED		MEAN JUDGED IMPORTANCE	MEAN IS NOW JUDGMENT	MEAN IS HOPED FOR JUDGMENT	DIFFERENCE BETWEEN MEAN IS NOW AND IS HOPED FOR JUDGMENT
ADMINISTRATION OF MEDICINE	EYE DROPS		4.18	3.43	4.63	1.20
	EAR DROPS		4.23	3.50	4.60	1.10
	NOSE DROPS & NASAL SPRAY		4.03	3.56	4.60	1.04*
	OINTMENT APPLICATIONS		4.03	3.53	4.60	1.07*
	NEBULLIZATION		4.09	2.96	4.40	1.44
	COMPREHENSION OF METRIC & APOTHECARY SYSTEMS		4.33	2.80	4.46	1.66**
	PREPARATION OF FRACTIONAL DOSES		4.30	2.80	4.43	1.63**
	AWARENESS OF SIDE EFFECTS OF DRUGS		4.70	2.43	4.30	1.87**
	KNOWLEDGE OF ACTION OF DRUGS		4.79	2.46	4.23	1.77**
	FAMILIAR WITH DRUG REFERENCES		4.12	2.76	4.33	1.57**
	STORAGE OF DRUGS		3.97	3.10	4.50	1.40
	ORDERING OF DRUGS		3.70	2.96	4.36	1.40
OXYGEN THERAPY	SAFETY PRACTICES IN USING OXYGEN		4.49	3.23	4.60	1.37
	STORAGE & MAINTENANCE OF EQUIPMENT		4.12	3.06	4.53	1.47
	ADMINISTRATION OF OXYGEN	BY CATHETER	4.55	3.03	4.40	1.37
		BY MASK	4.47	3.13	4.46	1.33
		BY TENT	4.42	2.96	4.40	1.44
PARENTERAL FLUIDS	PREPARATION OF PATIENT		3.97	3.16	4.53	1.37
	PREPARATION OF EQUIPMENT		4.12	3.16	4.53	1.37
	ASSIST WITH ADMINISTRATION		3.91	3.20	4.53	1.33
	ADMINISTER PARENTERAL FLUIDS		4.30	2.56	4.20	1.64**
	RECOGNIZE INFUSION REACTIONS		4.57	2.80	4.43	1.63**
	REGULATE FLOW OF FLUIDS		4.33	3.13	4.53	1.40
	DISCONTINUE FLUIDS		4.12	3.33	4.53	1.20

*LOW DISCREPANCY
**HIGH DISCREPANCY

APPENDIX 6 SUMMARY OF TASK SCALE DATA

FUNCTIONAL TASK AREA	INDIVIDUAL TASKS RATED	MEAN JUDGED IMPORTANCE	MEAN IS NOW JUDGMENT	MEAN IS HOPED FOR JUDGMENT	DIFFERENCE BETWEEN MEAN IS NOW AND IS HOPED FOR JUDGMENT
GIVES IRRIGATIONS	EYE	4.24	3.10	4.33	1.23
	EAR	3.97	3.10	4.36	1.26
	NOSE	3.88	3.00	4.30	1.30
	THROAT	3.93	3.03	4.26	1.23
	BLADDER	4.55	2.76	4.23	1.47
	COLON	4.39	2.73	4.23	1.50
	WOUNDS	4.58	2.90	4.36	1.46
	COLOSTOMY OR ILEOSTOMY	4.61	2.60	4.23	1.63**
APPLICATION OF HEAT & COLD	HEAT CRADLE	3.75	3.30	4.56	1.26
	ELECTRIC PAD	3.63	3.46	4.60	1.14
	HOT WATER BOTTLE	3.61	3.63	4.60	.97*
	HOT MOIST COMPRESSES	3.76	3.50	4.63	1.13
	PACKS	3.88	3.50	4.60	1.10
	SOAKS	3.73	3.50	4.60	1.10
	SITZ BATH	3.83	3.60	4.66	1.06*
	ICEBAG	3.48	3.70	4.66	.96*
	ICE COLLAR	3.57	3.63	4.66	1.03*
	COLD MOIST COMPRESS	3.58	3.53	4.56	1.03*
	COLD STERILE MOIST COMPRESS	3.91	3.26	4.53	1.27
	ALCOHOL	3.72	3.50	4.60	1.10
ASEPTIC TECHNIQUES	CLEANSE ARTICLES	4.39	3.36	4.66	1.30
	MAKE DRESSINGS FOR PACKS	4.27	3.03	4.43	1.40
	PREPARE PACKS AND TRAYS	4.40	2.86	4.40	1.54**
	SELECT METHOD OF DISINFECTION OR STERILIZATION	4.73	2.63	4.20	1.57**

*LOW DISCREPANCY
**HIGH DISCREPANCY

APPENDIX 6 SUMMARY OF TASK SCALE DATA

FUNCTIONAL TASK AREA	INDIVIDUAL TASKS RATED	MEAN JUDGED IMPORTANCE	MEAN IS NOW JUDGMENT	MEAN "IS HOPED FOR" JUDGMENT	DIFFERENCE BETWEEN MEAN "IS NOW" AND "IS HOPED FOR" JUDGMENT
ASEPTIC TECHNIQUES	AUTOCLAVE	4.60	2.76	4.23	1.47
	CHEMICAL AGENTS	4.89	2.75	4.23	1.47
	BOILING WATER STERILIZATION	4.52	3.23	4.36	1.13
ISOLATION	GOWN AND MASK TECHNIQUE	4.58	3.06	4.60	1.54*
	HANDWASHING TECHNIQUE	4.42	3.26	4.63	1.37
	GOGGLES TECHNIQUE	3.68	3.03	4.46	1.43
	CONCURRENT DISINFECTION	4.36	3.06	4.53	1.47
	TERMINAL DISINFECTION	4.55	3.06	4.53	1.47
DRESSINGS & BANDAGING	STOCK DRESSING CART	3.54	3.20	4.53	1.33
	USE OF DRESSING CART INSTRUMENTS	4.00	3.23	4.50	1.27
	STERILE DRESSINGS	4.64	3.20	4.56	1.36
	CLEANSE WOUNDS	4.58	3.16	4.53	1.37
	APPLY OR CHANGE DRESSINGS	4.61	3.30	4.60	1.30
	MONTGOMERY STRAPS	3.27	3.13	4.46	1.33
	BINDERS	3.42	3.16	4.56	1.40
	SLINGS	3.49	3.46	4.63	1.17
	BANDAGES	3.72	3.46	4.63	1.17
	APPROPRIATE BANDAGE FOR SPECIFIC AREA	4.09	3.16	4.50	1.34
PROCEDURES RELATING TO THE GASTRO-INTESTINAL TRACK	LAVAGE	4.53	2.73	4.30	1.57**
	CAVAGE	4.53	2.73	4.26	1.53
	WAGENSTEEN SUCTION	4.28	2.83	4.26	1.43
	CLEANSING ENEMA	4.27	3.36	4.60	1.24
	RETENTION ENEMA	4.09	3.20	4.46	1.36
	CARMINATIVE ENEMA	3.94	3.10	4.43	1.33

*LOW DISCREPANCY
**HIGH DISCREPANCY

APPENDIX 6 SUMMARY OF TASK SCALE DATA

FUNCTIONAL TASK AREA	INDIVIDUAL TASKS RATED	MEAN JUDGED IMPORTANCE	MEAN "IS NOW" JUDGMENT	MEAN "IS HOPED FOR" JUDGMENT	DIFFERENCE BETWEEN MEAN "IS NOW" AND "IS HOPED FOR" JUDGMENT
	RECTAL TUBE FOR FLATUS	4.03	3.33	4.50	1.17
PROCEDURES RELATING TO GENITOURINARY TRACK	CATHETERIZATION	4.78	2.70	4.40	1.70**
	CARE OF INDWELLING CATHETER	4.48	2.83	4.46	1.63**
	INSTILLATION OF BLADDER	4.73	2.73	4.26	1.53
USES & CARES FOR MECHANICAL DEVICES	CRADLES, "L'S," ETC.	3.55	3.03	4.36	1.33
	BALKAN FRAME	3.63	2.96	4.26	1.30
	STRYKER FRAME	4.06	2.90	4.30	1.40
	FRACTURE BOARD	3.91	3.03	4.33	1.30
	SAND AND SHOT BAGS	3.48	3.10	4.36	1.26
	SELF-LIFTING DEVICES, CRANES, ETC.	3.76	2.83	4.40	1.57**
	SIDE RAILS AND SIDEBOARDS	3.82	3.53	4.50	.97*
	RESTRAINTS	3.70	3.30	4.60	1.30
	CIRCO-ELECTRIC BEDS	4.06	2.76	4.30	1.54**
NURSING PROCEDURES & ROUTINES	PRE-OPERATIVE ROUTINE	4.21	3.16	4.50	1.34
	POST-OPERATIVE ROUTINE	4.33	3.13	4.46	1.33
	SUTURE REMOVAL	4.18	3.16	4.46	1.30
	SUTURING	4.60	2.53	4.20	1.67**
	TRACHEOTOMY CARE ROUTINE	4.75	2.66	4.33	1.67**
	OPEN AND CLOSED DRAINAGE OF CHEST	4.60	2.43	4.10	1.67**
	CHEST SUCTION	4.67	2.40	4.10	1.70**
	WOUND DRAINAGE TUBES	4.43	2.76	4.26	1.50
	ARTIFICIAL RESPIRATION	4.82	3.23	4.60	1.37
	USE OF RESUSCITATOR	4.80	2.83	4.50	1.67**
	EXTERNAL CARDIAC MESSAGE	4.89	3.10	4.50	1.40

*LOW DISCREPANCY
**HIGH DISCREPANCY

APPENDIX 6 SUMMARY OF TASK SCALE DATA

FUNCTIONAL TASK AREA	INDIVIDUAL TASKS RATED	MEAN JUDGED IMPORTANCE	MEAN IS NOW JUDGMENT	MEAN IS HOPED FOR JUDGMENT	DIFFERENCE BETWEEN MEAN IS NOW AND IS HOPED FOR JUDGMENT
NURSING PROCEDURES & ROUTINES	ENDOTRACHEAL ASPIRATIONS	4.76	2.70	4.20	1.50
	POSTURAL DRAINAGE	4.21	2.93	4.33	1.40
	POSITIONS IN TRACTIONS	4.33	2.73	4.13	1.40
	ASSISTANCE WITH CAST APPLICATION	3.76	2.93	4.20	1.27
	ASSISTANCE WITH CRUTCH WALKING	3.82	3.10	4.33	1.23
	CONVULSION OR SEIZURE ROUTINE	4.85	2.83	4.46	1.63**
	PARAPLEGIC OR QUADRIPLEGIC ROUTINES	4.36	2.63	4.13	1.50
	INSULIN THERAPY	4.91	2.60	4.16	1.56**
	RADIATION SAFETY MEASURES	4.73	2.63	4.20	1.57**
	CARE OF BODY AFTER DEATH	3.91	3.03	4.43	1.40

*LOW DISCREPANCY
**HIGH DISCREPANCY

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APPENDIX 7

APPENDIX 7 MEANS OF FUNCTIONAL TASK CLUSTERED ON TASK SCALE FOR NURSES, PHYSICIANS, AND SENIOR CORPSMEN

	NURSES		PHYSICIANS		SENIOR CORPSMEN	
	("IS NOW")	("IS HOPED FOR")	("IS NOW")	("IS HOPED FOR")	("IS NOW")	("IS HOPED FOR")
1. CORPSMEN BEHAVIOR	2.88	4.38	3.02	4.26	3.28	4.61
2. ADMINISTRATIVE KNOWLEDGE	3.12	4.54	3.62	4.58	3.29	4.67
3. PATIENT ENVIRONMENT	3.72	4.76	4.01	4.68	4.07	4.88
4. PROVIDING FOR PATIENT COMFORT	3.39	4.65	3.53	4.54	3.68	4.78
5. OBSERVE, REPT., AND REC. PTS. COND. AND SYMPTOMS	3.18	4.54	3.35	4.47	3.62	4.78
6. MAINTAINING RECORDS AND REPORTS	3.08	4.61	3.27	4.53	3.55	4.79
7. DIETS AND SERVING PROCEDURES	3.26	4.56	3.66	4.56	3.50	4.66
8. PHYSICAL EXAMINATION	3.22	4.58	3.42	4.97	3.32	4.69
9. COLLECTING SPECIMENS	3.10	4.54	3.27	4.54	3.25	4.68
10. ADMINISTRATION OF MEDICINE	2.86	4.40	3.15	4.35	3.31	4.70
11. OXYGEN THERAPY	2.93	4.40	3.22	4.39	3.07	4.66
12. PARENTERAL FLUIDS	2.84	4.38	3.13	4.39	3.21	4.65
13. GIVES IRRIGATIONS	2.63	4.20	2.98	4.13	3.08	4.57
14. APPLICATION OF HEAT AND COLD	3.18	4.49	3.64	4.56	3.73	4.78
15. ASEPTIC TECHNIQUES	2.65	4.17	3.18	4.36	3.01	4.56
16. ISOLATION	2.83	4.41	3.22	4.54	3.29	4.71
17. DRESSINGS AND BANDAGING	3.00	4.46	3.32	4.46	3.45	4.75
18. PROCEDURES REL. TO GI TRACT	2.85	4.32	3.14	4.32	3.09	4.56
19. PROCEDURES REL. TO GU TRACT	2.63	4.30	2.82	4.28	2.85	4.56
20. USES AND CARES FOR MECH. DEVICES	2.85	4.28	3.21	4.34	3.13	4.57
21. NURSING PROCEDURES AND ROUTINES	2.57	4.16	2.95	4.19	3.01	4.60

APPENDIX 8

APPENDIX 8 "MEANS FUNCTIONAL TASK CLUSTER FOR NURSES AND PHYSICIANS WHO REPORT WORKING CLOSELY WITH JUNIOR CORPSMEN AND THOSE WHO DO NOT WORK CLOSELY WITH JUNIOR CORPSMEN."

	"WORK CLOSELY WITH"		"DO NOT WORK CLOSELY WITH"	
	("IS NOW")	("IS HOPED FOR")	("IS NOW")	("IS HOPED FOR")
1. CORPSMEN BEHAVIOR	2.98	4.41	2.89	4.35
2. ADMINISTRATIVE KNOWLEDGE	3.46	4.71	3.24	4.54
3. PATIENT ENVIRONMENT	3.77	4.81	3.81	4.74
4. PROVIDING FOR PATIENT COMFORT	3.53	4.79	3.41	4.63
5. OBSERVE, REPT., & REC. PTS. COND. & SYMPTOMS	3.43	4.78	3.18	4.53
6. MAINTAINING RECORDS AND REPORTS	3.11	4.57	3.11	4.61
7. DIETS AND SERVING PROCEDURES	3.35	4.70	3.35	4.56
8. PHYSICAL EXAMINATION	3.31	4.75	3.28	4.59
9. COLLECTING SPECIMENS	3.23	4.76	3.15	4.56
10. ADMINISTRATION OF MEDICINE	2.90	4.55	2.92	4.38
11. OXYGEN THERAPY	3.06	4.62	3.02	4.40
12. PARENTERAL FLUIDS	2.88	4.46	2.93	4.39
13. GIVES IRRIGATIONS	2.71	4.34	2.72	4.20
14. APPLICATION OF HEAT AND COLD	3.26	4.62	3.33	4.53
15. ASEPTIC TECHNIQUES	2.81	4.31	2.79	4.25
16. ISOLATION	2.92	4.59	2.92	4.46
17. DRESSINGS AND BANDAGING	3.09	4.64	3.10	4.47
18. PROCEDURES REL. TO GI TRACT	2.99	4.57	2.93	4.34
19. PROCEDURES REL. TO GU TRACT	2.72	4.31	2.69	4.33
20. USES AND CARES FOR MECH. DEVICES	2.78	4.25	2.93	4.34
21. NURSING PROCEDURES AND ROUTINES	2.61	4.26	2.67	4.19

APPENDIX 9

APPENDIX 9 MEAN OF FUNCTIONAL TASK CLUSTER FOR PERSONNEL AT NAVAL HOSPITALS STATION HOSPITALS AND THE TEACHING STAFF AT THE TWO CORPS SCHOOLS.

	NAVAL HOSPITAL		STATION HOSPITAL		CORPS SCHOOLS	
	("IS NOW")	(IS HOPED FOR')	(IS NOW')	(IS HOPED FOR")	("IS NOW")	(IS HOPED FOR')
1. CORPSMEN BEHAVIOR	3.12	4.52	3.15	4.48	3.38	4.52
2. ADMINISTRATIVE KNOWLEDGE	3.26	4.63	3.26	4.62	3.44	4.57
3. PATIENT ENVIRONMENT	3.96	4.80	3.96	4.87	4.08	4.87
4. PROVIDING FOR PATIENT COMFORT	3.57	4.72	3.58	4.75	3.71	4.66
5. OBSERVE, REPT., & REC. PTS. COND. & SYMPTOMS	3.48	4.70	3.46	4.70	3.46	4.57
6. MAINTAINING RECORDS & REPORTS	3.67	4.73	3.44	4.73	3.42	4.57
7. DIETS AND SERVING PROCEDURES	3.44	4.6'	3.43	4.67	3.48	4.59
8. PHYSICAL EXAMINATION	3.29	4.63	3.31	4.71	3.42	4.60
9. COLLECTING SPECIMENS	3.19	4.63	3.21	4.64	3.37	4.54
10. ADMINISTRATION OF MEDICINE	3.15	4.60	3.18	4.59	3.27	4.42
11. OXYGEN THERAPY	3.06	4.58	2.97	4.55	3.19	4.41
12. PARENTERAL FLUIDS	3.09	4.54	3.07	4.58	3.18	4.43
13. GIVES IRRIGATIONS	2.93	4.44	2.98	4.48	2.97	4.22
14. APPLICATION OF HEAT AND COLD	3.54	4.67	3.66	4.76	3.55	4.48
15. ASEPTIC TECHNIQUES	2.90	4.43	2.98	4.52	2.98	4.30
16. ISOLATION	3.15	4.63	3.17	4.63	3.22	4.42
17. DRESSINGS AND BANDAGING	3.30	4.64	3.31	4.69	3.36	4.47
18. PROCEDURES REL. TO GI TRACT	3.05	4.49	2.97	4.49	2.99	4.25
19. PROCEDURES REL. TO GU TRACT	2.78	4.48	2.77	4.46	2.85	4.26
20. USES AND CARES FOR MECH. DEVICES	3.04	4.46	3.08	4.57	3.08	4.30
21. NURSING PROCEDURES AND ROUTINES	2.87	4.45	2.90	4.50	2.88	4.20

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13. ABSTRACT This is the first phase of a larger research effort. Two major areas were investigated (1) the nature of the present curricula at the two Schools and (2) the nature of the job requirements expected of newly graduated Corpsmen at their first duty station. The development and construction of four instruments and the analysis and description of the present curriculum was accomplished. The curriculum analysis consisted of a topic by topic analysis of the individual Corps School curricula and a summarization of major discrepancies. The retention instrument was designed to be a "comprehensive" test of knowledge covering material learned in the two basic schools. The survey was an integral part of the retention examination and was designed to determine where student and graduate Corpsmen gained retention item information. The task scale was composed of a list of the tasks that comprised the job which the Junior Corpsman performed at his first duty station. Raters were asked to respond in terms of present level of Junior Corpsman capability and a realistic "hoped for" rating assuming optimal training conditions could be augmented. The questionnaire asked for responses primarily of a biographic and attitudinal nature. The retention and survey instruments were administered to students of both schools in their final week of training and to Junior Corpsmen in thirteen select duty stations. This group also filled out one form of the questionnaire. Various other forms of the questionnaire and the task scale were administered to physicians, nurses and Senior Corpsmen at the thirteen select duty stations. These instruments and the evaluation were tailor-made to give the appropriate Naval decision-makers the necessary data input to begin formation of an experimental curriculum and to continue with future research phases.

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